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Exploration of Past Experiences, Attitudes and Preventive Behaviors of Consumers with Food Allergies about Dining Out: A Focus Group Study

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SUMMARY

This study investigated the attitudes and behaviors of consumers with food allergies toward dining out. Four focus groups with 17 individuals with food allergies were conducted to learn about their dining experiences. All sessions were audio-recorded, transcribed verbatim, and organized for extracting key concepts. Eight participants experienced allergic reactions after dining out at the restaurants, and many had unpleasant experiences when dining out. Participants perceived cross-contact, hidden ingredients, and miscommunication as potential causes of food allergic reactions. Participants identified lack of training, awareness, and knowledge about food allergy, and other operational restrictions such as lack of resources, as barriers to providing allergen-free food in restaurants. Buffet, ethnic, and specialty restaurants were seen as high-risk dining places due to potential risks of cross-contacts and hidden allergens in sauces. The participants took various precautions such as asking for clarifications of ingredients and seeking restaurants that are familiar to them. Consumers with food allergies experienced many difficulties in restaurants due to restaurant employees' lack of knowledge and training regarding food allergy. Through qualitative research, this study provides an in-depth understanding of the difficulties faced by consumers with food allergies, and addresses future training needs for restaurateurs to accommodate their clients with food allergies.

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INTRODUCTION

Food allergies affect 15 million adults as well as six million children under 18 years of age in the U.S. *(12, 20)*. Providing allergen-free food to clients with food allergies is increasingly challenging as the prevalence of food allergies continues to increase *(12)*. Symptoms of food allergies range from mild, such as skin rashes, to anaphylactic shock, the most severe allergic response and a leading cause of emergency room visits and 100–200 deaths yearly *(32)*. Since there is no cure for food allergies, stringent avoidance of allergens is the only way to prevent food allergic reactions *(12)*.

In addition to their life-threatening nature, food allergies also have some psychological and societal impacts on children with food allergies. Children with food allergies have been reported to be bullied, mocked, or harassed by their peers *(27)*. Moreover, food allergies impose some emotional reactions such as fear, guilt, and anxiety on parents of children with food allergies *(42)*. Families also face challenges related to their children attending schools, eating at restaurants, and traveling *(19, 31)*.

Food allergic reactions may occur in many places, but commercial restaurants are common places for such reactions to occur. Wanich, Weiss, Furlong, and Sicherer *(45)* reported that, of 294 participants who attended a conference organized by the Food Allergy and Anaphylaxis Network (FAAN), 34% had experienced at least one, and another 36% had experienced at least three, reactions related to dining at restaurants. Furthermore, Pumphrey *(35)* found that 76% of deaths caused by food allergies occurred after meals were consumed outside of the home. Another analysis of food allergic-related fatalities indicated that 29 of 63 of these cases were caused by food eaten in a restaurant *(45)*.

Some restaurant operators thought that customers should inform them about their food allergies *(1, 34)*. Diners, however, may assume that food is safe if allergens are not listed on the menu *(4)*. These mismatched expectations may result in food allergic reactions in restaurants. However, customers with food allergies have said they would not reduce the frequency of dining out even after allergic reactions, although they would take preventive measures *(15, 16)*. Entry-level foodservice staff often lacks formal training *(6)*, but only 55% of restaurants (n = 85) that participated in a survey indicated they had food allergy guidelines in place *(9)*. Barriers to food allergy training included high training cost, high staff turnover, time constraints, language barriers, and lack of interest by management and employees *(1)*.

The legal environment of food allergies is changing for restaurants in line with the effort to raise awareness of food allergies among restaurant operators *(13)*. States such as New York, Connecticut, Massachusetts, Illinois, Rhode Island, and Pennsylvania have mandated that at least one employee with food allergy knowledge be present during food production and service *(13)*. The Food Labeling and Consumer Protection Act (FLCPA) of 2004 mandates that manufacturers clearly identify on food labels any of the eight major food allergens and/or their protein derivatives in the food *(41)*. The Food and Drug Administration (FDA) recommends through Food Code 2009 that allergy education be a part of food safety training for foodservice employees *(14)*.

Several studies have investigated the causes of food allergic reactions in restaurants, as well as the knowledge and attitudes of restaurateurs toward food allergies *(3, 5, 29)*. Cross-contact, an accidental exposure to food allergens when "one food comes into contact with another causing their proteins to mix *(10)*" and hidden allergens in mixed dishes and sauces were two major causes of food allergic reactions *(27, 37)*. However, research about the attitudes (e.g., perceived causes of food allergic reactions and barriers to providing allergen-free food) and behaviors (e.g., preventive measures taken and types of restaurants avoided) related to dining out of consumers with food allergies is limited. In addition, the responsibilities of restaurateurs in serving customers with food allergies needs to be further investigated. Therefore, the purpose of this study was to explore the attitudes and behaviors of consumers with food allergies toward dining out, using a focus group approach.

The specific research questions this study addressed were (a) What are the past dining experiences of consumers affected by food allergies? (b) From the viewpoint of consumers with food allergies, what contributing factors led to food allergic reactions? (c) What types of restaurants are preferred by consumers with food allergies? (d) What preventive actions have individuals with food allergies or parents of children with food allergies taken? (e) What do consumers with food allergies expect from restaurateurs in terms of accommodating their needs? The results of the study may provide increased understanding of how consumers with food allergies feel about dining out and suggestions for restaurant operators to better understand the needs of their clients with food allergies, as well as providing the basis for development of a questionnaire for a quantitative survey study.

METHODS

Focus group discussion was used for data collection, as this study was conducted in an exploratory manner. Focus groups allowed researchers to explore in depth consumers' perspectives about dining out with food allergies. In addition, focus groups capture a wide spectrum of opinions and give participants an opportunity to engage in an open discussion in a comfortable and permissive setting *(21, 24)*.

Recruitment of focus group participants

Research protocols were approved by a university Institutional Review Board prior to data collection. To be eligible for the study, participants had to be adults (≥ 18 years old) allergic to at least one food item, or parents/guardians of a dependent with food allergies. A medical doctor's confirmation of food allergy diagnosis was not required to participate in the study, as it was beyond the scope of this research project. To ensure that only relevant data were collected, only those who dined out at least once a month at commercial restaurants were eligible to participate in this study.

Recruitment flyers were posted in selected public places, such as local grocery stores, in a mid-sized city in Kansas, after permission had been received from the facility management. Flyers were also posted on the bulletin boards of all of the colleges at a Midwestern university. The

TABLE 1. Demographic characteristics of food allergy focus group participants (n = 17)

Characteristics	No. (%)	Mean (Range)
Gender	2 (11.8)	
Male	15 (88.2)	
Female		
Age, years		32.3 (21–59)
Types of Food Allergens[a]		
Peanuts	3 (11.1)	
Tree Nuts	3 (11.1)	
Seafood	2 (7.4)	
Shellfish	2 (7.4)	
Wheat	1 (3.7)	
Soy	1 (3.7)	
Fruits	5 (18.5)	
Others	10 (37.1)	
Frequency of dining out		
At least once a week	10 (58.8)	
2–3 times a month	5 (29.4)	
About once a month	1 (5.9)	
Less than once a month	1 (5.9)	
Experiencing food allergic reactions in commercial restaurants		
Yes	8 (47.1)	
No	9 (52.9)	
Past experience working at a restaurant		
Yes	13 (76.5)	
No	4 (23.5)	
Length of work at a restaurant, months		23.2 (2–48)

[a]Some participants indicated more than one kind of food allergens

flyer included eligibility requirements, information on participant compensation ($20 cash), and the researchers' contact information. Similar information was sent to university students and staff through group emails. Interested parties were asked to contact the researchers to schedule a session. A confirmation email was sent to each participant after scheduling, followed by a reminder email one day before the focus group session.

Focus groups

Four focus groups were conducted in the spring of 2010, with three to six individuals participating in each session. An informed consent form was provided, and participants reviewed the study objectives, as well as statements regarding confidentiality and the voluntary nature of participation before signing the consent form. Before each session, participants were asked to complete a short survey to provide demographic information (i.e., gender and age), types of food items they were allergic to, frequency of dining out, and prior work experience in restaurants (Table 1).

Focus groups were facilitated by two researchers. Open-ended questions covering multiple topics were asked, such as past dining experience, perceived factors that triggered allergic reactions, preferred dining establishments, preventive measures taken while dining out, and participants' expectations of restaurateurs serving clients with food allergies (Table 2). These questions were developed from the investigators' previous food allergy research experience as well as from questions asked by Gupta et al. *(19)*. Participants were encouraged to express their opinions at any time during the discussion, and a probing technique was used to stimulate and generate ideas, elaborate upon comments, and clarify points *(24)*. Discussion of each topic continued until no new ideas were generated. Each session lasted about one hour, and discussions were audio-recorded and transcribed verbatim.

Data analysis

Transcribed data were organized using NVivo Version 8.0. To ensure validity, two researchers independently coded transcriptions, using an inductive coding method. The researchers developed the

TABLE 2. Focus group questions

Topics	Questions
Personal dining out experience	Have you ever had an allergic reaction after eating at the restaurant or any other foodservice operations?
Potential causes of allergic reactions	What can you think of some reasons why food allergic reactions could happen? Why people will get allergic reaction in the restaurant?
Perceived barriers to providing allergen-free food	What do you think are some barriers to providing allergen-free food in the restaurant? What could prevent them from being able to serve that food?
Identification of high and low risks restaurants	Are there some restaurants you tend to prefer or avoid because you have food allergies or your family with an allergy?
Preventive measures taken while dining out	Do you use any precaution when you're eating out because of your allergy?
	When you go to the restaurant, do you have specific things that you do to prevent an allergic reaction?
	When you go to the restaurant, describe to me what you would do.
Expectations of individuals with food allergies	Are there other accommodations, whether from restaurants, schools, or government agencies, that you want to see to ensure the safety of people with food allergies?

codes based on comments provided by participants *(21)*. The codes were compared repeatedly and reconciled to reduce redundancy. The open coding technique was used to develop categories and subcategories under each question. A new category was identified when "a repeated pattern was observed in response to focus group questions" (p. 130) *(38)*. Codes with similar meanings were grouped together under the same categories.

RESULTS AND DISCUSSION

Participant characteristics and food allergic reactions

Seventeen participants attended one of four focus group sessions: 16 consumers with food allergies and one mother of a child with a food allergy. Most were allergic to the major allergens, including peanuts, tree nuts, seafood, shellfish, wheat, and soy. Participants were also allergic to some of the less common allergens such as fruits (e.g., watermelon, honeydew, cantaloupe, kiwi, strawberries, banana, and citrus fruits), corn, mushrooms, caffeine, basil, lamb, beef, and sulfite preservatives, which previous studies have shown to be increasingly common causes of allergy among populations with food allergies *(40)*. Multiple food allergies were also common among our participants, with 11 of 17 reporting them. Other studies have found that individuals who are allergic to two or more food items are more common than those who are allergic to only one food items *(7)*. These findings may indicate more vigilance in reviewing food labels and preparing allergen-free food items.

Fourteen participants had had their food allergies diagnosed by a physician. The age at which the participants first found out they had food allergies ranged from 10 months to 40 years old, and allergic reactions involved the skin (e.g., itchiness and rashes), the cardiovascular system (e.g., tingling hands, difficulty breathing, and increased heart rate), and/or the digestive system (e.g., vomiting and diarrhea). Two participants had experienced anaphylactic shock leading to coma. Over one-half of the participants (n = 10) dined out at least once a week, followed by 2–3 times per month (n = 5) at commercial food service establishments. Of 17 participants, eight had experienced food allergic reactions after dining out in the restaurants. There were several reasons for these food allergic reactions. Some had ingested known food allergens because of peer pressure: *"I had food allergic reactions many times because my friends just tried to tease me and wanted to watch my eyes swell,"* one of the participants stated; *"They forced me to eat."* Another participant consumed the offending food item in order to try to "build up a tolerance": *"I have a lot (of food allergic reactions). There are a lot of times the restaurant employees put shrimp or whatever in the food I ordered. Actually, from the first bite I knew there was shrimp in the food, but I was trying to build up my tolerance. Maybe I'd eat a little bit, next time I'd eat a little bit more."* Food allergen handling practices of restaurant employees also caused some of the food allergic reactions: "*I did have a food allergic reaction once. My sister ordered pasta that had clams in it and I ordered a different pasta. I don't know if they used the same*

TABLE 3. Selected quotes from personal dining experiences

Themes	Selected Quotes
Pleasant	*"There were hundreds of customers in line, but they still checked the food allergens for me. I felt it was pretty cool."*
Frustrated/Insecure	*"When I said I am allergic to caffeine, they said, 'No, you're not!' The problem is 'I am. I promise you."*
	"Anything green, fresh or dried, bothers me. If there is something floating on the soup, I just don't eat it."
Angry	*"I have an EpiPen with me all the time; it is always in my purse and it's always like a protection for anything."*
	"They boiled the clams in the same pot they used to boil the pasta I ordered; … My dad was pissed off."

bowl or what they did, but I was really sick after eating with my sister."

Those participants who knowingly ingested allergenic food claimed that their food allergic reactions were "*less severe*" and non life-threatening. These reasons for justifying risk-taking behaviors were similar to those of a previous study conducted among college students with food allergies *(18)*, who stated that they would be more likely to avoid the allergenic food if they had previous experience of anaphylaxis *(18)*. Another research study indicated that the ingestion of food allergens was associated with being attracted by the appearance of the food, an unwillingness to ask for information about food allergens, a desire to be included by close friends, and efforts to test whether their food allergies had subsided *(36)*.

Most of the participants of this study dined out at least once a month despite past experience of having a food allergy reaction. This might be explained by the fact that dining out is convenient, and it fulfills the social needs of the diners for companionship *(23)*. Dining out is also inevitable when an individual is traveling *(23)*, and food consumed away from home has become a norm.

Personal dining experience

To gain a better understanding of the challenges and how these participants were served in foodservice establishments, the participants were asked to share their experiences of dining out. As shown in Table 3, a few reported pleasant experiences because of adequate accommodations, but many others shared negative experiences. One commented about eating out: *"It's more like a burden."*

The focus groups captured a wide spectrum of emotions. One participant felt that she was a bother to restaurant employees because she "*added more work*" for them: "*I feel like I'm an annoying customer that everyone hates at their table or hates in their kitchen (because I make special requests).*"

Some participants felt frustrated in dealing with restaurant staff who did not understand their situations, especially if allergens were less well-known. For example, *"Because it (basil allergy) is so unusual, people look at you like you are nuts."* Two participants worried that their specific food allergens could be "*everywhere."* Consequently, they carefully scrutinized the food they ordered.

Participants, especially those who had experienced allergic reactions while actually in a restaurant, expressed fear about dining out. *"When I ate the peanuts or cashews or something that caused my allergic reaction … my throat, I could feel that it was swelling. I think I am going to die; that is the scariest feeling that I have ever had. I need to take precautions, because it is scary. I'm probably going to die if I have too much of it."*

One participant suffered a food allergic reaction despite making a special request. She said: *"My dad threw a fit. I was tempted to throw a fit, too… I was sitting in the public bathroom of the restaurant, getting sick after accidentally ingesting the allergen. They weren't very happy either, because there were people in their bathroom hearing me throwing up. Too bad! But it's your [the restaurant's] fault!"*

The mother of a child with peanut allergy felt she had to "*stay calm*" and "*not make an issue"* out of her son's food allergy. To avoid drawing attention, she often used a "*soft approach*" as opposed to being assertive when conveying special requests.

The literature shows that food allergies impair the physical health and quality of life of affected individuals. Individuals with food allergies perceived themselves as having poorer health and higher anxiety than non-allergic adults *(28)*. Adolescents who had previously experienced food allergic reactions reported living in fear and feeling insecure *(29)*. Moreover, food allergy negatively affects immediate family members *(30)*. While some of our participants felt comfortable with the accommodations they received from restaurants, a few viewed themselves as "*annoying customers."* Such perceptions lead some individuals with food allergies to avoid circumstances that draw attention to themselves or their dependents with food allergies *(25)*. Some attempted to determine whether food was free of

TABLE 4. Selected quotes from potential causes of food allergic reactions

Themes	Selected Quotes
Hidden ingredients	*"Some of them blend the shrimp with the food and we couldn't see it, especially in the dumplings, wonton or fried wonton."*
	"From the restaurant or chef's standpoint, they have the right to put whatever they want into the food. I don't know the kind of sauce they use."
Miscommunication	*"There is a whole communication chain. The host might remember but did not properly communicate to the cook."*
Cross-contact	*"It could be potentially due to cross-contact, like people not changing gloves, and cleaning utensils (after handling different foods)."*
Incomplete food labels	*"The food labels are not required to specify the ingredients until certain percentage."*

allergens by reviewing menus rather than communicating their needs to restaurant employees *(16)*. In contrast to results of previous research, however, results obtained with our participants suggest that they were not afraid to reveal their health conditions to restaurant employees, despite some negative reactions.

Potential causes of food allergic reactions in foodservice establishments

Participants recognized many potential causes of food allergic reactions in restaurants (Table 4). They stated that cross-contact, which is the unintentional introduction of food allergens into another food items, could occur when (a) food items are placed close to one another (e.g., in ice-cream shops, buffet restaurants, and salad bars), (b) cooking equipment and utensils are shared or allowed to touch allergens (e.g., the same pot is used to boil different items or plates served to customers are stacked), or (c) allergens are transferred by food handlers' hands. One participant said, *"They usually stack up plates so close to each other when servers take food out to customers. When the food allergen falls over, the servers just wipe off the edge and take their plates out."*

Participants recognized that hidden ingredients in premade sauces or dishes could cause allergic reactions. A few participants also identified flavor-enhancing practices, such as "*blending shrimp in the dumplings or wonton*" served in Chinese restaurants, as detrimental to those with shellfish allergies.

Miscommunication between front- and back-of-house employees was identified as a potential problem. Our participants lacked confidence that servers or hosts conveyed their special requests accurately to food preparers: *"It's hard, because the person taking your order, answering your questions, making the food, and delivering food can all be different. It was just a communication crossing."*

Inconsistent and incomplete food labels were also identified as contributing factors in food allergic reactions. Labels may not include ingredients present in minute amounts (e.g., *"spices"*), and restaurateurs may not be aware of changes in products. *"The products may have the same labels, but the ingredients may have been substituted,"* one participant commented.

Restaurants and on-site foodservice establishments are responsible for most food allergic reactions *(17)*. Most reactions are caused by cross-contact *(8)*, hidden allergens *(4, 42)*, miscommunication between wait staff and cooks *(15, 26)*, and undeclared ingredients. In a retrospective study, hidden ingredients such as peanuts, tree nuts, legumes, and fish caused most allergic reactions *(15)*. Another study found that hosts or servers did not consult kitchen staff for more precise food allergen information, even though they were not sure how the food was prepared. Previous researchers have concluded that poor communication allowed allergens to be present in food despite special requests *(26)*. Our participants also identified most of these factors identified in previous research.

Our participants also suspected that lack of training, leading to lack of knowledge and awareness, is the main reason restaurants fail to provide allergen-free meals. Previous research supports their suspicions. A study involving 100 individuals employed in restaurants revealed that 52% had never received food allergy training *(2)*. A study by the UK Environmental Health Officers (EHOs) found that one in five special orders contained food allergens, which suggests that restaurants were inadequately prepared to meet increased demands of customers with food allergies *(26)*. As mentioned by our participants, some restaurant employees were not aware that a food allergic reaction could be deadly, often saying "*You'll be OK*" or "*You are not going to die.*" Therefore, this finding supports the belief that increased food allergy training is needed (Table 4).

Perceived barriers to providing allergen-free food for customers with food allergies

Participants recognized several barriers to providing allergen-free food in restaurants, such as lack of employee training (Table 5). They believed that restaurant employees were unaware of the seriousness and adverse effects of food allergies. "*I don't think restaurant employees are aware that food allergy can be that bad. People just assume that allergic reactions are just having hives."* Some said restaurant staff would "*downplay the risks*" of allergic reactions or be *"overly confident"* in their ability to provide safe food by

TABLE 5. Selected quotes from perceived barriers to providing allergen-free food

Themes	Selected Quotes
Lack of food allergy knowledge	"*They (restaurant employees) lack knowledge, understanding about food allergy, and the extent of harm it can actually cause to someone.*"
Lack of awareness about food allergy	*"Restaurant operators assume the population with food allergies is minimal and they are not important."*
Lack of concern	*"They (restaurant employees) don't take you seriously and they don't believe you."*
Lack of resources	*"Maybe they don't have the resource. They don't have enough pots and pans."*
Fast-paced working environment	*"Maybe the servers forget the orders because they are so busy. If they take time accommodating someone's special order, other customers might get frustrated or agitated."*

saying, *"It's okay, you'll be safe,"* when customers reminded hosts or servers about their allergies. A few participants cited employees' lack of personal experience in dealing with family members or friends with food allergies. "*If the employee or owner had this (food allergy) problem in their family, they would be more sensitive about it.*"

A lack of awareness about food allergies also appeared as not taking food allergy seriously. A request by one of our participants with severe beef allergy elicited a reply from the server: "*Oh, you must be a vegan.*" A participant who requested mashed potatoes without chives noticed that chives were merely "*picked out*" of the dish. Our participant with a mushroom allergy was told by the server: "*I never heard of anyone allergic to mushrooms before. Are you sure?*"

A participant with experience working at a restaurant reported that her chefs "*could not have cared less*" about food allergy issues, because they were "*ego chefs*" and unwilling to modify or reveal their *"secret"* recipes. One chef told this participant: *"You do not ask me to take the ingredients out of my special recipe."*

In addition, a few participants speculated that restaurant owners may believe providing special meals would increase costs: *"They have to use pre-packaged peanuts. That can cost more money. So, they'd rather lose a small number of customers like us than invest more money to buy different food or additional equipment.*"

Participants also speculated that fast-paced working environments might affect restaurant vigilance: "*When the restaurant is busy, the idea of having to clean off the whole grill to prepare allergen-free food might not get across anyone's mind."*

High employee turnover was identified as another barrier to providing allergen-free food*: "With the high turnover in the restaurants, the servers who know you when you walk in may be gone the next time you go back."* Two participants identified language as a problem. Many restaurants employ people who speak little English and who may not comprehend special requests.

Identification of high- and low-risk restaurants

Participants were asked about the types of restaurants they avoid based on their past dining experiences. First, ethnic restaurants were viewed as unsafe for customers with food allergies. A few participants mentioned ethnic restaurants, particularly Chinese, Italian, Mexican, and Thai, whose sauces usually include multiple ingredients that are not easily identifiable. Milk, egg, and soy proteins and their derivatives are commonly used in manufactured food ingredients, and restaurant operators, especially ethnic restaurant operators, must pay close attention to those hidden ingredients.

Some participants avoided buffet restaurants and salad bars, shunned snack shops and bakeries because of the risk of cross-contact with allergens, and avoided foods processed in small facilities, such as ice cream and chocolate. Participants also identified seafood restaurants and peanut-serving establishments as risky: *"There are some seafood restaurants that I would never walk into. I went to San Francisco, and there were a lot of restaurants serving seafood burgers. I am not walking in, no matter what."* Another participant added, *"There is a restaurant serving peanuts … I said it is peanut allergy people's hell."*

The perceived risks of dining out at large chain restaurants varied among participants. Some preferred large chains "*because employees in such restaurants are better trained and have better knowledge, skill, and awareness about food allergies"* or because they have more "*financial resources to accommodate* customers with food allergies by purchasing extra equipment or individually packed peanuts.*"* However, one participant argued that chain restaurants use prepackaged food products whose ingredients are unknown to employees. Also, variability in products and service personnel among franchised restaurants was of concern to our participants. Some participants mentioned fast food restaurants as less risky because of the *"simplicity"* of the food served, fewer ingredients, and consistent food quality because of preparation being minimal.

Other participants preferred establishments that prepare everything from scratch. "*The cooks make everything from scratch. You are in the line and see how they prepare food."* On the other hand, participants had mixed opinions about upscale restaurants. One stated: "*I am very skeptical about upscale restaurants, and I don't know if I should go. They often use peanut oil, and the chefs don't tell you what ingredients are in the food."* Another participant said she expected better service from upscale restaurants in hotels, but they often fell short compared with

TABLE 6. Selected quotes from expectations for the restaurateurs

Themes	Selected Quotes
Follow instructions provided	*"My expectation would be, if I tell you, please sanitize what you are using or don't cook it in the same thing like seafood, kind of things like that. I expect them to just do that."*
Aware of the consequences of food allergic reactions	*"I would expect them to understand that, if they don't do that thing as I told them, the consequences will be a whole lot worse."*
Identify food allergens on the menus	*"I hope in the menu, we'll see they are going to show this is seafood-free and this is lamb-free."*
	"If the restaurant can't list every single ingredient, at least they should have a descriptor or a note at the bottom of the menu that mentions about food allergies."

restaurants owned by small proprietors, which she perceived as more accommodating. Another participant dines out at upscale restaurants because the cooks *"took the clients more seriously."* Another respondent said, "*In an upscale restaurant, because I'm paying more, I expect food with better quality. Some upscale restaurants even told me if I brought my own rice pasta, they will cook it for me and prepare it in the way I want."*

A previous study found that 19–25% of consumers with food allergies have never dined out at certain types of restaurants *(44)*. However, because we purposely selected regular restaurant patrons with food allergies as the sample, our participants regularly visited restaurants. They perceived ethnic restaurants, buffet restaurants, bakeries, ice cream shops, and specialty restaurants as risky. Another study investigated the incidence of allergic reactions to peanuts and tree nuts in foodservice establishments and concluded that many allergic reactions were associated with Asian restaurants (13%) and bakeries (14%) *(17)*. Furlong, Maloney, and Sicherer *(16)* identified Asian restaurants (18%) and seafood restaurants (23%) as common sources of seafood allergic reactions. A qualitative study among consumers with nut allergies indicated that they perceived Middle Eastern and Asian restaurants as high-risk food service establishments *(25)*. Our participants believed that employees in ethnic restaurants had relatively low language skills that made it unlikely that they could explain the special ingredients used in their cuisine. Several participants mentioned that these employees might not know about allergens common in the U.S. or the seriousness of allergic reactions that are not common in their native countries. Our participants unanimously stated that they avoid ethnic restaurants.

Preventive measures taken when dining out

Most participants mentioned good communication with restaurant staff as the key to preventing allergic reactions as the result of dining out. They stressed the importance of asking staff about the food being served. *"If I have an allergic reaction, I think I am going to die. It is the scariest feeling! Asking questions and getting information beforehand is not as cumbersome, considering the consequences of not asking,"* one of the participants stated. Some participants call restaurants in advance and ask for descriptions of menus and whether they can provide allergen-free meals. Participants also read menus and ingredient lists carefully, but one participant said manufacturers did not respond to her requests for more information.

Participants discussed the importance of building good relationships with restaurateurs. They preferred restaurants where cooks modify food to meet their needs. Some employees, our respondents reported, would "*recognize us and our needs the moment we stepped into the restaurants."*

Unwilling to "*risk their life in other people's hands,*" three participants stated that they would look up information about food allergies and menus online. When information about allergen-free food is scarce, participants order simple and plain foods. Participants sometimes pack their own food or snacks in case allergen-free food is not provided.

Two participants said they tell friends and relatives about their food allergies. If they have allergic reactions in restaurants, their friends know how to react. To prevent potential cross-contact, one participant said she asks friends not to order food items that contain allergens. Several participants carry a self-administered epinephrine injector (e.g., EpiPen®) whenever they dine out.

The participants agreed that label reading was effective in preventing allergic reactions. They noted, however, that labels often didn't include miscellaneous ingredients, or provided general terms like "spices" instead of listing every item. Previous studies have identified the shortcomings of food labels, including lack of uniform allergen names and incomplete ingredient lists *(43)*. Some terms on labels were complex, ambiguous, and/or out of date *(22)*. Legislatures and manufacturers may need to work hand in hand to ensure that food allergens are more easily identified on food labels. Other preventive strategies taken by participants, which included calling restaurants beforehand to ask about food and accommodations and building good relationships with frequently-visited establishments, were consistent with results of previous studies *(25, 44, 45)*. Reports by some participants that they ordered "*simple*" food items that required relatively little handling and mixing were consistent with other studies. A previous

study indicated that "*complex food*" was more likely to contain hidden ingredients that go undetected *(33)*. One study indicated that having an EpiPen® could save lives, as many fatal allergic reactions resulted from delays in epinephrine injection *(45)*. This study found that eight of our participants carried an EpiPen® and one of them took antihistamine pills before and after dining out. Consumers with food allergies should be encouraged to bring epinephrine injectors (EpiPen® or Twinjet) to restaurants.

Expectations of individuals with food allergies

Participants expect government to play a more active role than it does in protecting consumers with food allergies, such as enacting and enforcing food allergy regulations. They seemed to think that legislation was needed to compel restaurateurs to take preventive measures. Generally, participants had low expectations that food service establishments would provide allergen-free food (Table 6). At a minimum, they expect servers to follow instructions strictly, yet they don't fully trust restaurant staff. Because some food allergies can cause death, they stated that they expected restaurants to provide more accommodations: *"I expect the restaurant to know what the ingredients are and to make adjustments. I expect them to know what's in their foods. If they don't know, I would expect them to ask somebody or look it up."*

A few participants expected menus to include the eight major allergens or detailed lists of ingredients beside food items. Some expected food allergy information to be available without asking. They also expected to see written statements on menus or at restaurant entrances, indicating a readiness to welcome clients with food allergies. One participant suggested that restaurants use this statement: *"If you have a health need, or allergy concern, please feel free to discuss them with your wait staff."*

Two participants said that safety was the consumer's responsibility. Counting on others was "*not worth taking a chance.*" One participant stated, *"There will be a lot of personal responsibility. You can't expect the government, the local restaurants, or the school kitchen to be prepared a hundred percent of the time. The person with this condition should really take the upper hand."*

In general, our participants accepted considerable responsibility and had low expectations of restaurant employees. They said they could not "*risk their lives in the hands of others."* Some studies have revealed that some customers with food allergies wouldn't ask restaurant servers for more information because they didn't want to be labeled "fussy" or embarrass themselves *(25)*. Our participants did not feel intimidated, and were proactive about seeking food allergy-related information for self-protection. Thomas and Mills *(39)* found that individuals with food allergies wanted restaurant menus to be accurate and contain a complete list of ingredients in the food items. The results of our focus group study supported these findings. Even though specifying ingredients, including the garnishes used for food preparation, might limit the flexibility and creativity of the chef to prepare special cuisine, this strategy might be well justified in light of the detrimental impact of food allergic reactions *(39)*.

CONCLUSIONS

Food allergy is an increasing public health problem in the U.S. This study has explored the attitudes and behaviors of consumers with food allergies regarding dining out. Because regulations regarding food allergy management vary from state to state, restaurant operators' accommodations for customers with food allergies may vary. Our findings reveal that, because of unpleasant experiences, some individuals with food allergies no longer trust restaurants and choose to be self-reliant. Since a significant number of individuals have food allergies, restaurant operators need to gain their trust by implementing strategies to attract, retain, and serve them. Restaurant employees may need to develop more empathy toward clients with food allergies through understanding the severity and impact of food allergies on individuals and their families. Some of our participants had uncommon food allergies, such as to basil, beef, or certain fruits, and reported surly responses from employees. Such responses suggest that restaurant employees should be more aware of the wide range of food allergens so that they can provide appropriate accommodations. Restaurants should implement food allergy training for their staff in order to improve knowledge, attitudes, and food handling behaviors. They can use resources such as the free training video produced by the Food Allergy and Anaphylaxis Network *(11)*. Information about effective food allergy training for restaurant employees should be identified and disseminated to restaurateurs and hospitality management educators.

Communication between customers with food allergies and restaurant employees, as well as between employees who work at the front and the back of the house, should be improved. Menus can be improved to include easy identification of food allergens. Symbols may be placed near menu items containing food allergens. To make sure that production staff members are aware of special orders, servers should communicate clearly with them.

Although this exploratory study provided new insight into the attitudes of individuals with food allergies and their behaviors when dining out, these findings need to be validated through quantitative survey. Future research could also investigate the most effective training methods for increasing food allergy awareness (e.g., video, role play, or case study) among restaurant employees. Behavioral change theory may be used to explain how to motivate employees to learn about food allergies and transform lessons into practice.

Limitations

Focus group methodology is not intended to gather generalizable data, but in-depth data, by encouraging participants to think more deeply about a subject. Therefore, the results of this study cannot be generalized beyond our participants. Our focus group consisted of 17 food-allergic consumers who dine out regularly. Therefore, the results may not capture the entire spectrum of opinions and behaviors of people with food allergies.

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