



Student and Parent Perspectives on Severe Food Allergies at College

Anne L. Ersig, PhD, RN, & Janet K. Williams, PhD, RN, FAAN

ABSTRACT

Introduction: Constant vigilance to manage severe food allergies (FAs) can lead to high stress. Additional stress may develop during life-course transitions, such as the transition to college. However, few studies have evaluated everyday and FA-related stress in college students with FA and their parents. This analysis examined experiences of 26 college students with FA and their parents.

Methods: Students and parents completed online surveys in a mixed-methods exploratory study of everyday and FA-related stressors, potential contributing factors, and FA management.

Results: FA affected nearly all areas of students' lives. Management required constant vigilance because of issues of trust in others. However, nearly 40% of students did not consistently carry emergency medication to counteract reactions. Parents worried from a distance while learning to trust their child's FA management capabilities.

Discussion: Additional preparation and support for college students with severe FA and their parents may help improve stress and FA management. *J Pediatr Health Care.* (2018) 32, 445-454.

KEY WORDS

Anxiety, college students, food allergies, stress, transition to adulthood

Anne L. Ersig, PhD, RN, Pediatric Nurse Scholar, University of Wisconsin-Madison, American Family Children's Hospital, Madison, WI.

Janet K. Williams, PhD, RN, FAAN, Professor of Nursing, University of Iowa College of Nursing, Iowa City, IA.

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Correspondence: Anne L. Ersig, PhD, RN, University of Wisconsin-Madison, American Family Children's Hospital, Madison, WI 53705; e-mail: anne.ersig@wisc.edu

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Food allergy (FA) management requires constant vigilance to avoid allergen exposure and potentially fatal reactions (Fenton, Elliott, & Clarke, 2013; Klinnert & Robinson, 2008; Mandell, Curtis, Gold, & Hardie, 2005; Stjerna, Worth, Harden, & Olin Lauritzen, 2017); however, this can lead to stress and anxiety (Duncan & Annunziato, 2018; Fenton et al., 2013; Gallagher, Worth, Cunningham-Burley, & Sheikh, 2016; Klinnert & Robinson, 2008; MacKenzie, Roberts, van Laar, & Dean, 2010; Mandell et al., 2005; Shanahan, Zucker, Copeland, Costello, & Angold, 2014; Stjerna et al., 2017). These may be particularly evident during developmental transitions, such as the transition to college. Substantial life changes in multiple domains during this transition, coupled with taking primary responsibility for independent FA management, could generate stress and anxiety (Arnett, 2000, 2007; Guidicessi, Rubes, Kim, & Annunziato, 2015) and could contribute to observed high rates of anaphylaxis and fatalities in this age group (Gupta, 2014).

Some anxiety facilitates appropriate vigilance (Mandell et al., 2005; Skinner & Edge, 1998), but the additional chronic and acute stress generated by FA and its management may lead to poor mental and physical health later in life (Compas, Jaser, Dunn, & Rodriguez, 2012; McEwen & McEwen, 2015). Despite high rates of stress among emerging adults with FA, few studies have examined their experiences or those of their parents (Greenhawt, Singer, & Baptist, 2009; Guidicessi et al., 2015; Karam, Scherzer, Ogbogu, Green, & Greenhawt, 2017). College students, in particular, face multiple potential FA-related stressors, including real or perceived reluctance to implement requested accommodations, difficulty creating a safe environment, and sharing important FA-related information with others who could provide support and assistance (Choi & Rajagopal, 2013; Lessa, Lozano, Esteve, & Frigola, 2016; Mandell et al., 2005; Olamyk & Elliott, 2016; Panzer et al., 2012). Findings from other studies indicate that parents of children with FA experience substantial stress

related to keeping their children safe (Annunziato et al., 2013; Broome, Lutz, & Cook, 2015); however, few have examined parental experiences of sending a child with an FA to college. This is a critical developmental transition, anticipation of which can lead to stress in parents of children with other chronic health conditions, such as Type 1 diabetes mellitus (T1DM; Ersig, Tsalikian, Coffey, & Williams, 2016). Parents of teens and college students with FA may have similar experiences, although these have not been described. Students and their parents may also experience sustained high stress and anxiety, particularly when allergic reactions occur (Ferro et al., 2016; Herbert & Dahlquist, 2008; Shanahan et al., 2014). To better understand the experiences of college students with FA and parents, this exploratory study examined their everyday and allergy-related stressors.

METHODS

Procedure

College students with FA and parents participated in a descriptive exploratory study approved by the University of Iowa institutional review board. Participants included 18- to 21-year-old college students with a self-reported severe FA and biological parents, stepparents, or parental figures of 18- to 21-year-old college students with severe FA. Both paired and nonpaired students and parents participated; although not identified by name, participant codes indicated which parents and students were paired. Students were recruited via mass e-mails at a public university, private college, and community college and through invitations on the Food Allergy Research & Education (FARE) Facebook page. Parents were recruited through participating students and the FARE Facebook page. Because this was an exploratory study, a formal power analysis was not completed (Sim & Lewis, 2012; Browne, 1995).

Instruments

Anonymous online surveys assessed students' state and trait anxiety, perceived FA severity, perceived likelihood of allergic reactions and negative outcomes, quality of life, and FA management routines and explored their everyday and FA stressors. Parents provided data on state and trait anxiety, perceived FA severity, and everyday and FA stressors.

The State-Trait Anxiety Inventory assessed state and trait anxiety (Barnes, Harp, & Jung, 2002; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Perceived FA severity was measured using the Perception of the Severity of Chronic Illness survey, which was adapted for parents (Leung et al., 1997; Sebold, Lovell, Hopkin, Noll, & Schorry, 2004). The Food Allergy Independence Measure (van der Velde et al., 2010) evaluated perceived likelihood of allergen consumption, experiencing a reaction, and negative outcomes. The Food Allergy Quality of Life instrument assessed FA-related

quality of life (Flokstra-de Blok et al., 2008). Investigator-developed questions, reviewed by FA clinicians to ensure applicability, assessed FA management, including allergen avoidance, crisis response, navigating social situations, and accessibility of emergency medication. Finally, everyday and FA-related stressors were explored with open-ended questions based on earlier studies: *What in your everyday life stresses you out?* and *What about your (child's) food allergy stresses you out?* (Ersig et al., 2016).

Analyses

We explored everyday and FA-related stressors using qualitative description (Sandelowski, 2000, 2010). The first author read all text and generated preliminary codes using Atlas.ti (Scientific Software Development GmbH, 2018). Similar codes were merged, after which the first author assessed coding consistency and identified overarching themes. The second author reviewed 25% of coded transcripts for completeness and codes lacking support. After this review, one code was added. Discussion of overarching themes led to consensus on minor revisions and exemplar quotes.

Descriptive statistics were generated for quantitative measures. Scale scores were calculated for the State-Trait Anxiety Inventory, Perception of the Severity of Chronic Illness survey, Food Allergy Independence Measure, and Food Allergy Quality of Life. Scores were compared with available normative data. Scores from scales without normative data were compared with scores from individuals with other chronic health conditions or their parents. When possible, we also compared results within families. Frequencies were generated for crisis situations and availability of medication, health care, and emergency care. Relationships among these results were examined using correlations.

RESULTS

Participants

Twenty-six college students with FA and 16 parents participated (14 student-parent pairs). Participants were primarily female (76% students, 76.9% parents) and White (92.3% students, 92.9% parents; Table 1, Table 2). Although the study intended to enroll students with severe FA, three students indicated in their responses that they had celiac disease, and the remainder referred directly to anaphylactic reactions and specific severe allergies. Students were not asked to specify the foods to which they were allergic; however, those who did volunteer this information indicated allergies to common allergens including peanuts, tree nuts, dairy, soy, and fruit. Some students identified multiple triggering allergens in their responses.

Unifying Theme

One unifying theme emerged from student and parent responses: having an FA in college has a *Significant*

TABLE 1. Emerging adult demographics

Variable	n	%
Male (n = 25)	6	24.0
Race (n = 26)		
White	24	92.3
Other	1	3.8
Prefer not to answer	1	3.8
College major (n = 25)		
Health related	9	34.6
Non-health related	16	61.5
Year in college (n = 11) ^b		
First	3	27.3
Second	3	27.3
Third	2	18.2
Fourth	2	18.2
Fifth	1	9.1
Current living situation (n = 25)		
On campus	17	68.0
Off campus	6	24.0
At home with family	2	8.0

^aNot all respondents answered all questions.
^bQuestion added to screening survey partway through study; 11 of 13 students answered this question.

Impact on students' lives, including academic pursuits and responsibilities, social lives, and daily choices. Students described substantial and far-reaching effects of FA on their lives: "... It's exhausting. I can't wait until summer, because after just one year, I am so tired. I need several months of safety before I dive back into daily uncertainty about my health and even life" (Student 8). Another student said, "I would curl up in my bed and wait for the pain to stop. It would interfere with my studying and social plans" (Student 4). Parents recognized the substantial impact of the FA on their child's life at college, with one parent indicating, "... There is danger 24 hours a day" (Parent 1). FA was an all-day,

TABLE 2. Demographics of parents of emerging adults with food allergy

Variable	n	%
Male (n = 13)	3	23.1
Race (n = 14)		
White	13	92.9
Native American/American Indian	1	7.1
Marital status (n = 14)		
Married	13	92.9
Married but separated	1	7.1
Education (n = 14)		
2-year degree	1	7.1
Some college	2	14.3
4- to 5-year degree	8	57.1
Graduate degree	3	21.4
Current employment status (n = 14)		
Fulltime employed	7	50.0
Part-time employed	3	21.4
Retired	1	7.1
Homemaker	3	21.4

everyday element of life, with many FA-related stressors identified in response to questions on everyday stressors.

Several students expressed concern about the impact of allergen exposure and reactions on academics. Unpredictability of allergic reactions generated substantial stress: "It is stressful to not know when the next reaction is going to happen and if it is going to interfere with my studies" (Student 9). The possibility of missing classes was also stressful: "...

Several students expressed concern about the impact of allergen exposure and reactions on academics.

if I do accidentally ingest something I am allergic to, I will be forced to miss class for potentially up to a week due to digestive issues and my mental capacity will be noticeably impaired for at least one month, severely impacting learning capability and grades. ... It could actually impact my scholarly record" (Student 5). Treatment also affected studying and school work: "It is difficult enough to get assignments done when I am tired from Benadryl, but after the trauma of an ER trip, I am ill for days" (Student 8). Another "... had to take my final exam in excruciating pain and was not able to perform as well as I would have otherwise" (Student 10).

Students and parents expressed concern about the availability of safe foods. As Parent 1 indicated, "... everything she eats has the potential to contain something that is life threatening. The food service at the university dormitories really doesn't seem to understand just how dangerous it is." One student was stressed by "[n]ot having access to a kitchen or affordable groceries. ... Really feeling nutrition deficits while going to classes full time and working, especially during crammed times like finals" (Student 1). Parents were concerned that students would choose not to eat: "... not knowing if she is getting enough to eat ... sometimes she just won't eat so as not to inconvenience anyone" (Parent 5). Students developed strategies after bad experiences: "During a busy and stressful week, I accidentally bought the wrong kind of protein bar. I ... remained sick for days afterwards ... [and] set up a buddy check system with friends on more 'suspicious foods' for allergens before I ate them" (Student 1).

Students also described effects of FAs on social relationships. Difficulty sharing FA-related information with new social connections limited opportunities to educate new social network members about FA. Some were supportive, particularly in crises: "... they took me to [hospital] ... my roommates monitored me throughout the evening to make sure I was okay" (Student 6). Others, however, lacked important support from friends, and worried about the effects of FA on others. Concerns about being a burden weighed heavily: "...

I'm on the soccer team and getting food for away games is a huge inconvenience for my coach" (Student 3). Many continued to perceive themselves as "... different from everyone else around me. I have to worry about things that my peers never think twice about. For them, food is a central part to just about every social activity. For me, it makes me isolated, ill, and feeling like the food allergy freak. It's a feeling I thought I would get past once I was in college" (Student 8). One parent even expressed concern that the student "... may kiss a girl who has eaten peanuts" (Parent 6), highlighting the risks of social relationships for college students with FA.

FA concerns extended to finances, because many students sought safe foods outside of college dining facilities. Although some chose "not [to] participate in any type of meal program or have access to prepared food on campus due to both lack of allergen free food, as well as trust issues" (Student 5), others were required to pay for costly dining plans providing potentially unsafe foods while obtaining safe foods from other sources.

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Additional Themes

Two other common themes were identified, plus one parent-focused theme. Common themes were the need for *Constant Vigilance* to avoid potentially fatal exposures, coupled with issues of *Trust in Others*. Parents also expressed *Worry From a Distance*.

Many students identified unanticipated challenges in obtaining allergen-free foods on campus. Requested accommodations were expected to ensure a safe environment; however, actual experiences reflected significant variability in safe food practices, requiring constant vigilance: "[I'm] always having to check the ingredients in foods that wouldn't logically include things I'm allergic to, but have them anyway" (Student 1). A lack of accurate information, particularly on food labels, made life frustrating and disconcerting. For most, FA was "always an issue," with "the possibility of cross-contamination or mislabeling" (Student 2). These inaccuracies could lead to allergen exposure and reactions: "I've ingested products mostly due to the school's negligence with ingredient signs" (Student 3). Uncertainty added to students' stress: "... it is not the obvious peanut-containing foods that worry me, but rather ones that are questionable" (Student 11). Parents concurred: "The food service ... doesn't seem to understand just how dangerous it is. They put food items with nuts and

allergens right next to foods my daughter can eat" (Parent 1).

However, risk of allergen exposure was not limited to dining halls. Food available in multiple shared settings was all potentially unsafe. One roommate was "... disrespectful ... she would leave food wrappers or food I was allergic to laying around the room" (Student 7). Parents expressed similar concerns: "If someone had peanut butter on their hands and opened a door and our daughter touched that same door later she could have a reaction. Food items you would not imagine containing nuts, DO have nuts... . There is danger 24 hours a day" (Parent 1).

These experiences led to issues of trust, particularly in relying on others to provide safe foods. For many students, this was exacerbated by absence of parental support: "I now have to monitor my food by myself which means I trust other people less around food" (Student 4). "... I would never trust the worker even if I saw them prepare it with my own eyes due to cross contaminated surfaces" (Student 5). The transition out of the safe home environment into college was a source of "... constant [stress] ... because I'm not at home and my family isn't safely preparing my meals" (Student 6), and students were "surrounded by plenty of people who (a) didn't know about my allergies, or (b), didn't care" (Student 7).

In response, some students actively advocated for their own interests and safety. Parents who facilitated development of these skills trusted their children's management: "... I don't worry a great deal about her. I know she is on top of her food allergies and she knows how to handle them" (Parent 3). Students valued parents' trust and the opportunity to take responsibility: "They trust me more, and expect me to be more independent" (Student 12), while recognizing this could be difficult for parents: "... the process of letting go has been very hard on both of my parents" (Student 7). Visits home required continued support for students' autonomy and independence, a change from when the student lived at home: "... they don't hover as much as when I lived at home. When I do visit home, I feel like I am expected to be a more responsible individual, but I also get more respect from my parents" (Student 13). Recognizing that their children were now adults required parents to "[balance] the fine line while she is home, giving her space, yet including her in our family activities. We are more aware of the foods we bring into the house to keep her peanut safe as well. The dynamics have changed since she has been home, and we are balancing that" (Parent 4).

One parent-only theme was identified, *Worry From a Distance*. Some parents expressed doubt about the student's ability to use self-advocacy skills on campus, with one parent worrying "... that she will not eat instead of risking being sick. [S]he won't speak up and advocate for herself to make sure her needs are being

met” (Parent 2). Students hoped to gain their parents’ trust: “My mother has to resort to trying to worry and interfere with my health and wellbeing from several hours away. I finally have the chance to live away from home and truly be independent, which stresses her out... . I hope they see me as more of an adult, and respect my autonomy in my own life” (Student 8). Some parents lamented the greater distance and associated lack of direct involvement; while trusting their children to appropriately manage FA risks, they were unable to trust that others were similarly invested in their child’s health and well-being. These parents perceived the world as a dangerous place: “Our daughter ... can advocate for herself. But the world is much bigger and much more dangerous at the [university]... . We might be able to help our daughter react more quickly and make better decisions if we were there at the moment rather than 90 miles away” (Parent 1).

Quantitative Measures

Descriptive analyses were completed for quantitative measures (Table 3). Compared with norms for working adults, parents had higher trait anxiety ($p = .02$; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Students perceived FA as less severe on the Perception of the Severity of Chronic Illness survey than teens with other chronic health conditions ($p = .02$; Leung et al., 1997). Most students knew where to obtain emergency care, had a crisis plan, and had a way to obtain medication. Nearly 35% had experienced a crisis in college, and just over 25% had been to the emergency department or urgent care in the last year. However, only 60% nearly always carried emergency supplies. Ability to obtain medications ($r = 0.53$,

$p = .011$) and knowing where to find emergency care ($r = 0.56$, $p = .006$) were correlated with greater likelihood of carrying emergency medication. Those carrying emergency medication were also more likely to have had a FA-related crisis ($r = 0.46$, $p = .029$) or a recent emergency department or urgent care visit ($r = 0.51$, $p = .016$).

DISCUSSION

This analysis explored everyday and FA-related stressors experienced by college students with FA and their parents. Findings identified one overarching and three additional themes. The overarching theme was that FA had as *Significant Impact* on all areas of life for college students; other themes identified were (a) the need for *Constant Vigilance* in an effort to avoid allergen exposure, (b) issues of *Trust in Others*, and (c) parental *Worry From a Distance*. Although similar findings have been described in children with food allergies (Stjerna et al., 2014) and college students with celiac disease (Panzer et al., 2012), this study extends that work to college students with FA and expands on survey-based studies of college students with FA (Greenhawt et al., 2009; Guidicessi et al., 2015; Karam et al., 2017).

The overarching theme emerged from students’ and parents’ descriptions of the broad impact of the FA and the resulting stress in nearly all aspects of the college experience: dining and food options and choices, academics, finances, and social relationships. Effects on food experiences and choices were expected, given the critical importance of monitoring food ingredients in avoiding allergen exposure and reactions. Students in this study, however, also described variable implementation of planned dining accommodations. Students reported difficulty interacting with dining service workers to ensure provision of safe foods. These experiences reflect findings from studies of food service worker understanding and implementation of FA-related standards, which found that cross-contact and cross-contamination were common (Choi & Rajagopal, 2013; Lessa et al., 2016; Panzer et al., 2012) situations the students in this study experienced consistently. This study described the impact of workers’ limited understanding of FA standards from the students’ perspective, similar to findings from a Canadian university (Olarnyk & Elliott, 2016). Many colleges have implemented safe dining options, but the experiences of students in this study highlight the importance of adequate training for all food service workers and ensuring ongoing correct implementation of needed accommodations.

A more unexpected finding was students’ description of the impact of the FA on academics and finances. Although parents of children with FA report effects on school participation (Bollinger et al., 2006; Gallagher et al., 2016; Stjerna, 2015), studies of college students have primarily focused on the impact of conditions such

TABLE 3. Emerging adult food allergy management plan and experiences

Management Element	<i>n</i>	%
Plan for crisis at college	22	84.6
Nearly always carry emergency supplies (<i>n</i> = 22)	13	59.1
Emergency care available	23	88.5
Medication availability	22	84.6
Experienced a crisis at college	9	34.6
Most recent visit to emergency department/urgent care (<i>n</i> = 25)		
Within the last year	7	26.9
1-2 years	3	11.5
More than 2 years	5	19.2
Never	10	38.5
Health care provider identified at college (<i>n</i> = 25)	3	18.8
Services at college to which student self-identified		
Dining services	15	57.7
Housing services	14	53.8
Student health	9	34.6
Other	2	7.7

^aNot all participants answered all questions; percentages are calculated for the number of participants responding to each.

as celiac disease (Panzer et al., 2012). Unpredictable FA reactions and treatment affected whether students could fulfill academic expectations and requirements, including class attendance and completing assignments and examinations. Parents of children with FA report similar effects on school attendance and participation, with 34% identifying a direct effect on attendance and approximately 40% indicating that FA affected participation in sports and other activities (Bollinger et al., 2006; Gallagher et al., 2016; Stjerna, 2015). The impact of FA reactions and treatment on full participation in college academic life should be further explored. College accommodations for individuals with FA have largely focused on dining services; findings from this study suggest that academic accommodations may also need to be considered.

Students in this study, but not parents, described finance- and money-related stress primarily related to the expense of obtaining safe foods. This links to implementation of dining service accommodations; students who perceived on-campus foods as unsafe resorted to finding and purchasing safe foods elsewhere. Some students who took this approach were unable to remove themselves from college meal plans; being responsible for food plan costs in addition to those resulting from independently purchased foods led to financial stress. Students also reflected that the time spent finding and purchasing safe foods took away from the time they had available for other aspects of the college experience. Their experiences are similar to those of parents of children with FA (Gupta, 2014) and college students with T1DM (Fredette, Mawn, Hood, & Fain, 2016). Parents of children with FA report high out-of-pocket costs, 31% of which were associated with obtaining nonallergenic foods (Gupta, 2014). For college students and families with limited incomes, FA may have a more extensive impact (Bilaver et al., 2016). Like FA, T1DM also requires strict dietary management (Fredette et al., 2016). However, daily dietary management of T1DM is generally more predictable than for FA; as a result, although students with T1DM indicated that their diagnosis affected food and dining options, they coped by developing food-related routines (Fredette et al., 2016). Students with FA, however, are at greater risk of unanticipated FA reactions, and routines may not mitigate this uncertainty and its impact on students.

Efforts to obtain more information on available accommodations at different colleges and universities are supported by recent work by the Food Allergy Research and Education (FARE) organization. FARE recently launched a database of accommodations available at some institutions of higher learning, with others to be added in the future (Food Allergy Research & Education, 2018). Parents and college students can use this information to identify those colleges that may be a good fit for the student and his or her FA-related needs;

planning ahead may help mitigate some of the financial and food-related stress experienced by college students in this study. In addition, continued interaction with dining service directors could help improve inconsistent implementation of accommodations and facilitate student use of purchased meal plans. Broader initiatives, such as those addressing inconsistencies in food labeling for foods that “may contain” allergens, would also help support sufficiently informed decision making regarding food safety for college students with FA (DunnGalvin et al., 2015).

Having an FA also affected students’ social lives and interactions. Students in this study had difficulty sharing FA-related information with peers and others on campus, which may reflect broader social implications of FA, a desire to avoid being identified as different, and concerns about being a burden, similar to findings in other studies of adolescents and young adults (Olarnyk & Elliott, 2016; Sampson, Munoz-Furlong, & Sicherer, 2006). Although college often leads to new relationships, interests, and career paths and increased independence (Arnett, 2000, 2007), earlier life experiences may play a role in reluctance to disclose a severe FA to others. Children and teens with FA are bullied, are stigmatized, and may have difficulty making friends (Dean, Fenton, Shannon, Elliott, & Clarke, 2016; Egan & Sicherer, 2016). Fears of similarly negative social interactions in college may make it more difficult for college students to share important FA information with peers and other potential sources of social support. However, peer support is a critical contributor to psychological well-being among adolescents (Oris et al., 2016) with chronic health conditions; establishing a new social network at college could provide needed support to college students with FA.

The first additional theme identified was *Constant Vigilance*, with parents and college students describing this as required to avoid allergen exposure and subsequent reactions. Most college settings and situations were viewed as unsafe sources of exposure, similar to findings from parents of children with FA (Polloni et al., 2015; Stjerna, Vetander, Wickman, & Olin Lauritzen, 2014) and adolescents who had recently experienced an allergic reaction (Marklund, Wilde-Larsson, Ahlstedt, & Nordstrom, 2007). This study extends these findings to college students, who viewed all situations as unsafe and sought to independently obtain safe foods, an approach that was described as exhausting. Balancing appropriate vigilance with quality of life is desirable (Annunziato et al., 2015; Gallagher, Worth, Cunningham-Burley, & Sheikh, 2012; MacKenzie et al., 2010; Olarnyk & Elliott, 2016) but can be difficult to achieve. Most students in this study did carry emergency medications nearly all the time; results indicated a higher percentage than in other studies of young adults with food allergy, a difference that could be due to the self-selected sample in this study.

Although *Constant Vigilance* is a key FA self-management approach, hypovigilance has also been seen in adolescents (Ferro, Van Lieshout, Ohayon, & Scott, 2016; Karam et al., 2017; Warren et al., 2017) and college students (Greenhawt et al., 2009; Guidicessi et al., 2015; Karam et al., 2017) seeking to minimize the impact of an FA on their social lives. This was also evident in this study: some students did not always carry emergency medications and were more willing to take risks with potentially allergenic foods.

Students and parents in this study also had issues of *Trust in Others* to provide a safe environment, citing instances of allergen exposure on campus. Children with food allergy have also reported difficulty trusting others to prepare safe foods (Stjerna, 2015) but also have the opportunity to adapt to their environments over time and ensure that members of their social networks have sufficient knowledge about food allergy. In contrast, college students move to new and unfamiliar social and physical environments, requiring students to develop trusting relationships with members of a completely new social network. Similar experiences in college students with celiac disease (Panzer et al., 2012) were ameliorated by establishing a new, supportive social network on the college campus. Students need to be able to trust that dorm rooms and other living situations are safe for them; experiences of some students in this study highlight the importance of roommate interactions in particular. One additional accommodation that colleges could consider is offering flexibility in housing choices to allow students to choose their roommates or elect to live in single rooms.

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Few studies have examined stress and anxiety in parents of older children with FA, such as young adult college students; most have focused on parents of young children (King, Knibb, & Hourihane, 2009; Stjerna et al., 2017). Despite developmental and life transitions that shift FA management responsibility to college-aged children, parents in this study continued to *Worry From a Distance*. These findings are similar to those obtained from mothers of young children with FA, who have higher state and trait anxiety and higher perceived stress compared with norms (King et al., 2009). Findings indicate that a child's FA may continue to affect parental quality of life, anxiety, and stress, even if the child has left the family home for college.

Limitations

Limitations include small sample size, a nonrandom study sample, limited geographic region and educational institutions, and cross-sectional design. Although

the sample size was small, findings reflected those from other studies. Potential participants self-selected into the study, which could have led to the enrollment of those with higher anxiety. However, quantitative self-report measures of anxiety were within normal limits, suggesting that this particular participant group was not highly anxious. Although open-ended questions generated rich data, terms such as *crisis situation* were left open for interpretation. Responses generally referred to a potential or actual exposure to the allergen and the student's response to that exposure. Future studies could provide examples of crisis situations to support consistency in interpretation. Focusing only on students in college excludes those choosing alternatives and experiencing different environments. Longitudinal studies of evolution of allergy management would provide valuable information to guide the transition to adulthood.

Implications for Practitioners

Practitioners' expertise is critical to effectively prepare families for the transition to adulthood, and out of the family home, a developmental milestone not included in established guidelines for FA management (National Institute of Allergy and Infectious Disease Sponsored Expert Panel, 2010; Sicherer & Sampson, 2014). Practitioners and parents should ensure students can independently manage FAs across settings, providing experiences necessary for successful transitions from highly supportive family environments to the multiple contexts encountered during and after college (Peniamina, Miroso, Bremer, & Conner, 2016). Practitioners also serve an important role in ensuring that students with food allergies know and understand their rights under the Americans with Disabilities Act, to which public and private schools must adhere (Bennett, 2013) and under which severe food allergy is considered a disability (U.S. Department of Justice Civil Rights Division, 2013).

To achieve this, practitioners can support family efforts to transfer of allergy management responsibility to adolescents, as developmentally appropriate. Facilitating development of resilience and self-advocacy skills may also help college students navigate multiple new environments. Early identification of and support for children's self-advocacy efforts can help build these skills over time. Similar to other chronic conditions of childhood, practitioners can encourage current and future college students with FA to seek support from others on campus. Formal and informal sources of support can provide critical help during the student's time in college. College health centers, nurses, and other health care providers working in those settings and older students with food allergies are all crucial potential sources of support. Formal college support networks for FA are relatively new; however, similar models exist for other chronic health conditions, such

as the [College Diabetes Network \(2018\)](#). FARE continues to develop and expand resources for students going to college and their parents, which include an online Facebook support group for college students and detailed information on identifying a college-based support group ([Food Allergy Research & Education, 2018](#)).

Implications for Researchers

This study extends prior work on children and adolescents with FA and their parents. Additional research to determine facilitators and barriers to establishing safe food environments on college campuses would provide critical information for developing interventions to improve campus food environments and experiences. Future studies should also extend limited knowledge of how parents and health care providers prepare adolescents for independent management of FA and determine which students may need more support and education to facilitate the best possible transition to a college environment. This could include development of self-advocacy skills, which could improve FA awareness and allow students to demonstrate independence ([Azmitia, Syed, & Radmacher, 2013](#)). Student and campus characteristics that influence experiences for those with FA on college campuses should be explored. Some students may need more assistance making the transition to college; identifying characteristics of these students would provide a foundation for developing interventions to improve their experiences. Different types of food allergies and sensitivities can lead to different college experiences. For example, students who have multiple FAs or allergies to less-common foods may face unique challenges navigating the college environment. Implementing gluten-free dining options for celiac disease and providing broad accommodations for more common allergens may facilitate colleges' provision of safe foods; however, students with multiple or less-common allergies may experience particular difficulty.

CONCLUSIONS

This analysis explored everyday and FA-related stressors of college students with FA and their parents. Results extend and support findings from earlier studies of adolescents with FA and survey-based studies of college students with FA. FA in college has a *Significant Impact* on all aspects of students' lives; this analysis added academic responsibilities and finances as additional areas affected by the FA. Additional major themes included the need for *Constant Vigilance* to avoid allergen exposure, issues of *Trust in Others*, and parental *Worrying From a Distance*. Findings suggest that students and parents may benefit from more comprehensive preparation for developmentally appropriate shifts in FA management across childhood and adolescence.

Although awareness of FA-related risks and vigilance in avoiding reactions is needed, practitioners can support college students and their parents in developing optimal strategies to help ensure the best possible mental and physical health for students with FA and their parents.

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