

Psychosocial Impact of Growing Up With Food Allergies

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ABSTRACT

Having food allergies (FA) is a chronic and potentially life-threatening condition affecting children's psychosocial health. Providing children with food allergies a safe, allergen-free environment can affect all aspects of life because FA may impede development and create potential states of social isolation, depression, and anxiety, as well as putting these children at risk for bullying and high risk-taking behavior. This article focuses on the psychosocial impact of FA throughout childhood. It discusses how this prolonged stress can affect caregivers and their perceptions of the overall health of their children. Nurse practitioners can support families affected by FA through education, support, and appropriate management.

Keywords: adolescent, caregivers, early childhood, food allergies, patient education, school-aged child

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Food allergies (FA) can define the way a child lives. Depending on the hypersensitivity, an allergic reaction can even be fatal. Although there is no cure, complete avoidance of the allergen and emergency preparedness are critical to the safety and well-being of the child.¹ Caregivers of these children exert significant effort to provide a safe environment free of allergens, affecting social activities inside and outside the home.^{2,3} As a result of these limitations and constant stress, children with FA are at higher risk for psychosocial problems than children without allergies.³ This article provides an overview of FA, including epidemiology, psychosocial impact on children and caregivers; and the role of the advanced practice registered nurse (APRN) in caring for these children.

OVERVIEW

Common allergens in children vary by geographic location and include cow's milk, peanuts, egg, and tree nuts.⁴ Milk, egg, wheat, and soy allergies can sometimes resolve during childhood, whereas allergies to peanuts, tree nuts, fish, and shellfish typically last into adulthood. Risk factors for FA include sex, race, genetics, timing of exposure to foods, comorbidities such as eczema and asthma, and

vitamin D deficiencies. Timing is critical. Delayed oral exposure to allergens can lead to increased sensitizing exposure through the skin, causing atopic dermatitis, an inflammatory state similar to asthma and FA.⁴ Vitamin D levels can be a risk factor because deficiencies may increase peanut sensitization, whereas sufficient vitamin D levels might have a protective effect against this FA.^{4,5}

Epidemiology

In recent years, the incidence of FA has increased to 8% of pediatric patients in the United States. Among these 5.9 million children, 38.7% have incurred severe food-related reactions. There is a higher incidence of FA in boys than girls. Although black and Asian children are more likely to have FA than white children, they are less likely to be diagnosed.⁶

CLINICAL PRESENTATION

History

Accidental ingestion of food allergens can lead to a variety of reactions, depending on the individual. Obtaining a comprehensive history is critical to understanding the severity of an individual's FA. Because FA present early in life, young children may

not be able to communicate symptoms such as pain, difficulty swallowing, or tingling; therefore, this can first present as food refusal.⁷ Parents need to be conscious of what their children are eating to be able to identify allergens. The form or quantity of the food, along with duration and type of reaction, needs documentation.

Furthermore, other factors and triggers besides the allergen itself need to be taken into consideration because they can also contribute to the onset of an allergic reaction such as food-dependent exercise-induced anaphylaxis (FDEIA), which can be the result of exercise and certain foods.⁷ Anaphylaxis, a systemic reaction involving two or more organ systems, is the result of a food antigen binding to the immunoglobulin E, setting off an inflammatory cascade resulting in smooth muscle spasms, increased vascular permeability, and respiratory arrest.⁸ With FDEIA, anaphylaxis can occur when exercise follows the ingestion of food that generally would not trigger an allergic reaction by itself. Although rare, FDEIA episodes can only develop with specific co-triggers and cofactors such as extreme temperatures or ingestion of another food allergen. Therefore, the APRN should document as much history about the patient as possible to help diagnose a FA.⁹

Physical Examination

Symptoms on physical examination can range from local to systemic, with the most severe reaction being anaphylaxis.⁸ Symptoms of allergy can involve the skin, gastrointestinal tract, airways, and the circulatory system. Common dermatologic symptoms include urticaria, angioedema, pruritis, and erythema. Gastrointestinal symptoms include hypersensitivity, abdominal pain, and vomiting. Respiratory symptoms include coughing, wheezing, stridor, hoarse voice, nasal congestion, and respiratory distress. Although circulatory symptoms are less common, hypotension and collapse are known to occur as a consequence of anaphylaxis.⁷ These symptoms can be alarming to parents, especially after the initial presentation, and can lead to higher levels of stress regarding FA, influencing their behaviors and actions in the future.¹⁰

CHILDHOOD AND ADOLESCENCE EFFECTS

Early Childhood

As young children transition from a primarily milk-based diet to one revolving around solid foods, parents introduce solid foods one at a time to more easily identify potential triggers. A child with a severe FA can cause parental anxiety and may lead to over-protective behavior, restricting their diets and activities with others.¹⁰ Parents of younger children are especially protective due to their inability to avoid the FA and management of this condition.¹¹

Unlisted ingredients or cross-contamination can occur, leading to reactions and sources of stress. They are less likely to entrust care of their children to others, which can affect the child's relationships with other people.³ Activities outside the home are limited unless a parent can attend. By missing these opportunities for social engagement, children may have a difficult time developing social skills and autonomy.^{1,3} Children with FA are more likely to indirectly ask their parents for help with problem-solving, implying a learned behavior toward helplessness.¹² Furthermore, these children tend to have more separation anxiety compared with their allergy-free siblings.¹³ Although separation anxiety disappears by the time a child is 2 years of age, it can return during stressful situations and may affect future performance and function.² Studies on the psychosocial effects of FA on early childhood are online in [Table 1](#).

School-Age Child

School-age children are more aware of their FA and its effects. Children develop more independence from their parents at this stage and begin to take a more active role in managing their FA.¹⁴ They learn cues from their parents; therefore, outward expressions of parental anxiety can make them nervous about their ability to manage the condition independently.¹³ This fear is worse with the normal transitions during childhood, from starting school to making new friends and developing social skills.¹⁵

School-age children have more interactions outside the home, placing them at higher risk for an allergic reaction. Social occasions result in accidental ingestion of food allergens, so parents will limit many

of their outside activities. This restriction decreases their opportunities to expand their social skills, solidify social groups, and increase peer involvement. Even activities only involving the family, including traveling or eating at restaurants, can be stressful and overwhelming to parents that they will choose to avoid them, affecting family functioning as a whole.^{3,16}

As a result, children with FA begin to see themselves as different from their peers. They describe themselves and their diets as being “special” and discern how it affects other people’s perceptions of them.¹⁶ By 8 years old, they may develop negative feelings toward FA and their lifestyles, leaving them feeling isolated. This social isolation coupled with a negative perception of their FA increases their risk for depression, social stress, lower self-esteem, sense of self-worth, and social anxiety.^{14,16}

Bullying at school makes psychosocial difficulties related to FA worse. Children with FA are twice as likely to be bullied compared with students without FA.¹⁷ Reasons for being bullied include having to sit at separate lunch tables, carrying around allergy medicine with them at school, and receiving special treatment from school personnel.¹⁸ They may be intentionally excluded from their peers, endure teasing and name-calling, and are targets of rumors.¹⁷ Sometimes, bullies will expose their victims to their food allergens to trigger a physical reaction. All types of bullying can negatively affect a child’s mental health, leading to increased feelings of sadness, embarrassment, anxiety, loneliness, and low self-esteem.¹⁸ [Online Table 2](#) reports studies about the psychosocial effects of FA on school-age children.

Adolescents

The psychosocial challenges continue throughout the adolescence period. Adolescents are 4 times more likely to be at risk for psychosocial problems including depression, ADHD, and anxiety, which are made worse by bullying. Their social activity restriction puts them at higher risk for persistent depressive symptoms compared to the rest of the population.^{16,19} Adolescents must learn to cope with these psychosocial difficulties while transitioning into an independent adult.

Because adolescents are more independent, greater risk-takers, and have less parental supervision, FA put them at higher risk for severe reactions.¹⁹⁻²¹ Their failure to bring epinephrine injectors to social events and desire to experiment with food allergens puts adolescents at a higher risk for anaphylaxis.^{20,21} Stjerna reported that adolescents with FA must mature as individuals to successfully manage their allergies. Learning to do this helps define them and give them a sense of agency.²² [Online Table 3](#) summarizes studies about psychosocial effects of FA on adolescents.

EFFECT ON CAREGIVERS

Anxiety and Protectiveness

Caregiver anxiety is highest immediately after a child is diagnosed with FA and decreases over time.²³ Caregivers, family members, and school personnel must receive guidance on how to recognize and manage FA. The thought of having to react when accidental food ingestions happen can cause anxiety and fear, especially if they lack knowledge about the disease.¹⁰ The burden of managing this condition can be frustrating and stressful, decreasing one’s quality of life.²⁴

Caregivers respond to this anxiety in a variety of ways, including adopting a protective parenting style. They are vigilant when managing daily activities and have trouble separating themselves from their children. Caregivers tend to be more demanding and controlling over their children’s food choices and allow for fewer food choices.²⁵ Transferring care to daycare or school can be difficult because they are afraid that others are unable to manage their child’s problem. Their fears are not unfounded because there is a lack of awareness regarding FA, making schools potentially unsafe places. Some parents will choose to work from home and homeschool their children to prevent exposure to antigens.²⁴ The struggle between the lack of control in an outside setting and giving their child a typical childhood adds to overall caregiver strain.

Limitations on Social Activities Outside the Home

To prevent allergic reactions from occurring, caregivers become experts in reading food labels and

preparing meals that avoid cross-contamination.² Parents are concerned about accidental food ingestion outside the home because most fatal reactions occur in settings outside their control. Although they do their best to remind their children to avoid food triggers, they mostly rely on other adults to ensure their child's safety and manage their condition in an emergency.²⁶ As a result, they tend to limit outside activities and only go to places that will accommodate their FA.^{2,3} Many caregivers will find ways to work around the stigma of having FA, bringing allergy-free foods to social gatherings, allowing for continued development of social skills.²⁴

Public policy needs to be more cognizant of patients with common FA. Public places such as airlines, restaurants, and grocery stores need to reduce risk of allergen exposure. Airlines vary in their FA policies, with many serving peanuts again despite allergy risks. Public policy would ensure consistent enforcement and safety to everyone.

Frustrations

Caregivers adjust their lives to accommodate their child's needs. Food shopping can be frustrating due to the need to ensure foods purchased are safe.²⁷ Caregivers are unable to eat out because few restaurants cater to people with FA.² The stress is magnified by the frustration and sadness when hearing their children are not invited to events due to their food restrictions.²⁷

This anxiety can affect other parts of caregivers' lives. Compared with parents who do not have children with FA, caregivers have difficult social relationships due to the effort spent ensuring a safe environment for their child.²⁷ The impact of a child's FA on quality of life can differ between parents. Mothers are particularly affected, as they may play a large role in daily management because they are responsible for deciding which foods are safe to eat. Mothers have a better perspective of a child's FA true impact because they have a better recall of past allergic reactions.^{13,26} Disagreement with managing a child's allergy can lead to conflict even in parents with strong relationships.²³ This difference in anxiety and perceived stress can result in poorer outcomes for the whole family.^{2,13} The cost of EpiPens and lack of

full insurance coverage may also cause financial anxiety for the family.

Change in Distress Over Time

As children with FA age, parent's distress will decline because some common allergies (eg, wheat, eggs, and soy) can resolve in childhood.⁴ Parents have also stated that with time, they learn to adapt to living with the FA on a daily basis.²³ This constant management helps build confidence and control while decreasing fear. Caregivers find ways to provide a normal life and eventually develop coping strategies that help reduce anxiety.¹ [Online Table 4](#) provides the results of studies that looked at the social and emotional impact of FA on caregivers.

MANAGEMENT

Family Adaptation

Many factors can influence how a family adjusts to having a child with FA. Socio-economic status, the age of the parents, and gender of the child all affect daily FA management.⁴ Furthermore, the severity of the condition, including the number of food allergens, history, and duration of diagnosis, influences caregiver treatment and a child's perception of themselves and their overall health.¹⁶ Social support can mitigate the stress on families. Children with friends who know about their FA do better psychologically and socially. Caregivers with social support adjust better to having a child with FA.²¹ Social support improves their well-being and keeps the family functioning.²³ Parents help to reduce their child's anxiety by managing their stresses and fears. If parents calmly approach FA management, focusing on safety, and modeling the use of positive coping mechanisms for themselves, their children come to understand that FA is a manageable disease.¹⁴ The more overprotective the parents, the lower the child's functioning will be later on in life.¹⁵

THE ROLE OF APRN

Education

Early education is key to managing all aspects of FA. APRNs can play a supportive role by providing training early, ideally before initial symptoms present.

Box 1. Management of FA for Advanced Practice Registered Nurses

Group	Management
Young children (mainly under parent supervision)	- Educate parents about FA and its management.^{4,8,11} - Provide essential materials, including medical bracelets, epinephrine injectors, and develop individual action plans. - Provide written educational materials about FA. - Teach parents to become comfortable with using an epinephrine injector. - Talk about recent developments, concerns, and questions about FA management at every well-care visit. - Teach parents how to read food labels and cook foods without allergens. - Encourage parents to carry injectable epinephrine medicines. - Teach children about their allergies in a developmentally appropriate way.¹¹ - Encourage participation in activities in safe environments free from allergens outside the home.¹¹ - Playdates - Preschool - Day care - Encourage parents to educate friends, family, school staff, and restaurant staff about FA.²⁹ - Work with parents to develop coping strategies to decrease anxiety. - Encourage them to join support groups.²⁶ - Talk about any concerns parents have about management.
School-age children (largely under parent control)	- All interventions as above. - As child ages, teach children self-care behaviors to decrease risk of accidental ingestion. - Encourage activity holidays specifically for children with FA away from parental supervision.¹⁶ - Communicate with school officials.²⁹ - Ensure there is essential emergency allergy medicine at school. - Better supervision to avoid allergens and bullying.
Adolescents (largely under adolescent control)	- All interventions as above. - Consider adolescent risk-taking behaviors, increased reliance on peer opinion, and risk for bullying when developing plans of care.^{21,29} - Remind adolescents to carry emergency medicine to social activities. - Have epinephrine injectors within reach.
Caregivers	- Educate parents about FA management. - Assess parental concerns at every visit. - Allergy action plan. - Provide anticipatory guidance.² - Encourage caregivers to seek social support.²³ - Connect them with social groups.²⁶ - Work with caregivers to develop coping strategies. - Educate school personnel.²

FA = food allergy.

Making sure the family, caregivers, and the school have copies of an allergy emergency plan can enhance teaching.

It is essential for APRNs to identify patients and families who may be at a higher risk of psychosocial issues. Those who have a mental health disorder, which may be exacerbated or unmasked by FA, should be referred for evaluation and treatment.¹¹ Making a medical home with mental health professionals and allergists will not only ensure safe management but also decrease the overall impact of FA on a child's physical, emotional, and psychological health.^{7,11}

School nurses, teachers, administrators, and students must have an understanding about FA. Children with FA should be included to see what changes they would like made at school. Shared decision-making can promote autonomy and healthy self-care behaviors while decreasing the risks for anxiety, depression, and social isolation.²¹ APRNs can foster this by providing proper education, open communication, and resources. **Box 1** provides tips for APRNs related to FA management in young children, school-age children, adolescents, and caregivers.

Social Support

One of the most important things an APRN can do is provide social support to families by listening. Recommending families to FA support groups can lead to increased knowledge and confidence in managing the condition. Group therapies aimed at building social networks and easing parental anxiety may improve quality of life, increasing overall health outcomes for the whole family.²⁶ Encouraging children with FA to join support groups or participate in activities exclusively for people who share the same condition can decrease anxiety and obsessive-compulsive scores, as well as promote open expression of their feelings. Children can begin to learn how to manage their FA and develop healthy self-care behaviors, reducing the risk of future severe allergic reactions.²⁸

CONCLUSION

Growing up with FA can be difficult for children. Not only can exposure to allergens possibly cause

life-threatening reactions, it can also have a psychosocial impact on their development. APRNs can support affected families by recognizing the influence of FA on a child's overall health. They are in the optimal position to work with other health care providers and school officials to ensure proper care in various settings outside the home to develop a mutually agreed-on plan of care.

SUPPLEMENTARY DATA

Supplementary tables associated with this article can be found in the online version at <https://doi.org/10.1016/j.nurpra.2018.03.017>. **JNP**

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1555-4155/18/\$ see front matter
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<https://doi.org/10.1016/j.nurpra.2018.03.017>

Table 1. Studies of Psychosocial Effects of FA in Early Childhood

Author	Sample	Methods	Objective	Results
Abdurrahman et al (2013) ¹⁰	184 caregivers of children under 18 years; Canada	Mixed methods questionnaires, phone interviews	To explore caregiver experiences of their child's first FA reaction	Caregivers have knowledge gaps about management. Three majors themes: (1) lack of education after the first allergic reaction, (2) long wait times for allergists, and (3) family anxiety.
Bollinger et al (2006) ³	87 families with children with FA; United States	FA Impact Scale	To determine the daily impact of FA	FA affects various family activities. It affects stress levels, school attendance, meal preparation ($P < .001$), stress and free time ($P < .001$), school activities ($P < .001$), and autonomous social activities ($P < .030$).
Dahlquist et al (2015) ¹²	133 children with and without FA and their mothers; United States	Observed children completing puzzles in the presence of their mothers	To explore parenting promoting autonomy and independent problem-solving in children with FA	Younger children aged 3–4 years old with FA are more likely to indirectly ask for help, and mothers provide support when it is not needed ($P = .009$). No differences in older children 5–6 years of age.
King et al (2009) ¹³	46 families of children with peanut allergies; United Kingdom	Peds-QL and WHOQOL-BREF for QOL, SCAS, and STAI for anxiety and PSS for stress; QOL proxy questionnaires for family members	To see how peanut allergies influence a child's QOL and anxiety and its effect on the immediate family	Children with FA had poorer QOL and greater separation anxiety ($P < .05$). Significant differences were seen in females ($P = .001$). FA had an impact on stress ($P < .001$), anxiety ($P < .001$), and QOL ($P = 0.04$) for the mother compared to father or siblings.

FA = food allergy; QOL = quality of life; SCAS = Spence Children's Anxiety Scale; STAI = State-Trait Anxiety Inventory; WHOQOL-BREF = World Health Organization Quality of Life—BREF; PSS = Perceived Stress Scale.

Table 2. Studies of Psychosocial Effects of FA on School-Age Children

Author	Sample	Methods	Objective	Results
Chow et al (2015) ¹⁵	533 mothers of children with FA; United States	FAQOL-PF and DASS-21 for mothers, PedsQL for children	Examine maternal understanding of child's QOL; identify factors that moderate challenges and maternal perception	Overprotective mothers saw their child as having a reduced QOL and decreased functioning ($P < 0.05$). Children of mothers with higher levels of stress were at higher risk for anxiety.
DunnGalvin et al (2009) ¹⁶	62 children with FA aged 6–15 years old; United Kingdom	Focus groups with vignettes for discussion	To describe the beginning and development of FA-related thoughts, emotions, and behavior	FA can affect a child's development in autonomy, peer relationships, safety, identity, coping strategies, and perception of food (Cohen's kappa 0.82–0.94).
LeBovidge et al (2009) ¹⁴	141 mothers of children with FA (2–17 years old) and 69 children with FA (8–17 years old); United States	BASC, PRS, SRP, and MASC for child psychological distress, CATIS for child attitudes to FA; STAI to measure maternal anxiety	To measure and identify factors related to psychological distress in children with FA	Mothers reported higher distress in their children than children did in self-reports ($P = .001$ for anxiety; $P = .001$ for depression). Anxiety in children is related to a child's negative perceptions and maternal distress ($P = 0.034$).
Lieberman et al (2010) ¹⁸	353 parents of children with FA; United States	Anonymous questionnaire	To assess presence and types of bullying in children with FA	Children are bullied because of FA (82% by classmates at school, 21% from school staff); 79% of participants were bullied because of FA.
Muraro et al (2014) ¹⁷	120 children (8-19 years); Italy	Survey based on Olweus Bully/Victim Questionnaire to determine bullying frequency with Mantel-Haenszel test to compare bullying types	To compare FA-related bullying to non-allergy-related bullying	FA children are bullied twice as much compared with their peers (60%–32% with $P < .001$), with younger children having a higher risk compared with older children ($P < .002$). Types of bullying: social, verbal, relational, and physical.

FA = food allergy; FAQOL-PF = Food Allergy Quality of Life Questionnaire- Parent Form; DASS-21 = Depression Anxiety and Stress Scales, Short Version, QOL = quality of life; BASC = Behavior Assessment System for Children; PRS = Parent Rating Scales; SRP = Self-Report Personality; MASC= Multidimensional Anxiety Scale for Children; CATIS = Child Attitude Toward Illness Scale; STAI = State-Trait Anxiety Inventory.

Table 3. Studies of Psychosocial Effects of FA on Adolescents

Author	Sample	Methods	Objective	Results
Ferro et al (2016) ¹⁹	1303 adolescents aged 14–21 years with their mothers; Australia	YSR or YASR to identify FA, CBCL for emotional and behavior problems, and DSSI for maternal distress	To determine the extent of emotional and behavioral issues related to FA in adolescents	Psychological and behavioral problems are common ($P < .001$). Persistent depression can last into adulthood. Mother and child can differ when reporting behavioral problems.
Greenhawt et al (2009) ²⁰	287 college students older than 18 years of age; United States	Online questionnaire	To look at behaviors and trends in FA among college students	Among survey participants, 36.2% had anaphylaxis. Not maintaining their medicine ($P = 0.028$) and eating foods with allergens ($P = 0.026$) increase risk for anaphylaxis.
Sampson et al (2006) ²¹	174 adolescents from 13–21 years of age; United States and Canada	Online anonymous questionnaire	To find out how adolescents with FA developed risk-taking behaviors and coping strategies	Many adolescents take risks with FA that vary with social circumstances and perception of risk ($P = .001$). More education may reduce this behavior in the future.
Sterjerna et al (2015) ²²	10 adolescents aged 11 to 17 years; Sweden	In-person interviews about their experiences	Explore how adolescents manage various food risks	Adolescents develop strategies and gain agency when managing their allergies and learn to balance health and social risks across all social contexts.

FA = food allergy; YSR = Youth Self-Report; YASR = Young Adult Self-Report; CBCL = Child Behavior Checklist; DSSI = Delusions-Symptoms-States Inventory.

Table 4. Studies of Psychosocial Impact of FA on Caregivers

Author	Sample	Methods	Objective	Results
Sommer et al (2016) ²⁵	12 children (5 with FA, 7 without) and their mothers; United Kingdom	Observations of mother and child interaction using MBRS and CBRS	To compare interactions between mothers and young children (with or without FA) while problem-solving	Mothers of children with FA had higher use of behavioral commands and soft directives and less use of requests ($P < 0.05$). Children whose mothers were direct toward them were less engaged.
Springston et al (2010) ²⁴	1,126 caregivers of children with FA; United States	FARQOL-PB questionnaire	To understand how a child's FA can affect a caregiver's QOL	Impact of FA varied, but all are affected by social limitations. Poorer QOL seen in more knowledgeable parents with children who were recently hospitalized, had multiple allergies, or were allergic to specific foods (confidence interval = 95%, relative risk ratio = 1.25).
Valentine & Knibb (2011) ²⁷	34 children (aged 8–12 years) with FA, 15 without FA and caregivers; United Kingdom	PedsQL, WHOQOL-BREF and pictures/diary to track factors affect their QOL	To explore how FA affects children and caregivers	FA affect children's QOL ($P = .027$) but have a bigger effect on caregivers' QOL ($P = .05$).
Williams & Hankey (2015) ²³	299 caregivers of children with FA; United States	PSSC and FAQL-PB	To examine a caregiver's health-related QOL (HRQL)	Social support increased HRQL for caregivers, and social negativity decreased HRQL ($P < .001$). Social negativity was a stronger indication for HRQL than social support ($P < .001$).
Warren et al (2015) ²⁶	876 families (at least 1 child under 21 years) with FA; United States	Adapted FARQOL-PB scale	To look at differences in QOL and empowerment in parents of children with FA	Mothers had greater empowerment to care for their child ($P < .001$) and lower FARQOL compared to fathers ($P < .001$). Many experiences impaired FARQOL.

FA = food allergy; MBRS = Maternal Behavior Rating Scale; CBRS = Child Behavior Rating Scale; FARQOL-PB = Food Allergy Quality of Life- Parental Burden questionnaire; QOL = quality of life; PedsQL = Pediatric Quality of Life Inventory; WHOQOL-BREF = World Health Organization Quality of Life- BREF; PSSC = Perceived Social Support for Caregiving Scale; FAQL-PB = Food Allergy Quality of Life- Parental Burden Scale.