

ANXIETY AND FAMILY FUNCTIONING IN CHILDREN WITH FOOD ALLERGIES

by

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ABSTRACT

Having a food allergy is a stressful thing for a child and their family. This is a chronic illness that requires vigilance, time, and effort in order to prevent anaphylaxis, a life threatening allergic reaction. There has been research done on the physical effects of food allergies on children, but less is known about how this affects children psychologically. This study was administered via an online survey to children 8-years-old and older, who have diagnosed food allergies, and their parents. The severity of the food allergy was related to level of child anxiety, but family functioning did not moderate this relationship.

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INTRODUCTION

Having a food allergy can be a stressful thing for a child and their family to manage. It is a chronic illness that requires vigilance, time, and effort in order to prevent anaphylaxis, a life threatening allergic reaction. This is a “severe and rapid onset allergic response, which can result in circulatory collapse, coma and death” (Evans & Rouf, 2014). There has been research done on the physical effects of food allergies on children, but not much is known about how this affects children psychologically. Going into anaphylaxis is a traumatic event that must have psychological consequences for the affected person.

Research has been done on the relationship between food allergies and other chronic illnesses in children and family functioning. In families who have a child with a chronic illness, the presence of such a condition has been shown to cause problems with “intrafamilial relationships, family structure, and family cohesion” (Herzer et al., 2010). Family functioning is believed to be very influential in children with chronic illnesses’ general wellbeing. Generally, parents and children with food allergies report lower quality of life ratings than those with other chronic illnesses and healthy children. Parents of children with food allergies have to constantly be aware of the ingredients in the foods that they keep in their houses and live in fear that their child will come in contact with the food that they are allergic to outside of the home (Klennert et al., 2015). Parents also have to make sure that they inform anyone else who looks after the child of the child’s food allergy and what they have to watch out for (Ravid et al., 2015). Because of these inconveniences, parents report high levels of stress and children are aware of the stress that their parents are experiencing. Even after consulting with doctors, parents of children with food allergies still feel like they lack the necessary knowledge to keep their children safe and worry about them constantly. Food allergies also are a financial burden on families because food that

doesn't contain common allergens are usually substantially more expensive than regular food (i.e. gluten free food) (Chow, Pincus, & Comer, 2015). All of these factors affect family functioning in families with children who have food allergies.

Food allergies also affect children's anxiety levels. Children with food allergies report separation anxiety, fear of having an allergic reaction, and anxiety towards eating. (Shanahan et al., 2014). In a study done by Shanahan and colleagues, there was an association found between food allergies and separation anxiety, generalized anxiety, ADHD and anorexia nervosa. The relationship to anorexia nervosa can be inferred to come from the children being so fearful of having an allergic reaction that they abstain from eating food all together. It was also found that even after controlling for other possible factors, symptoms of generalized anxiety increased over time (Shanahan et al., 2014). Another study compared anxiety levels in children with peanut allergies and children with diabetes mellitus, another chronic illness. It was found that the children who were allergic to peanuts experienced significantly higher levels of anxiety than their peers with diabetes (Ravid et al., 2015). Factors that may affect anxiety levels in children with food allergies include whether or not the child has been prescribed an epinephrine auto-injector (epi-pen), the presence of anaphylaxis, and their locus of control in regards to their health (Ravid et al., 2015). After a severe allergic reaction or anaphylaxis, children and their families are left traumatized and extremely fearful of the event reoccurring (Evans & Rouf, 2014).

Family functioning and the severity of the food allergy can impact a child's level of anxiety. In regards to the severity aspect, if one has to constantly be conscious of what they are eating in order to avoid anaphylaxis, that person may live in a constant state of anxiety and fear. This anxiety and fear is not confined just to the affected child, but to their families as well. Due

to this, some families with children with food allergies report that the constant fear of an allergic reaction negatively affects the family and the child's social life (Marklund et al., 2007).

In terms of family functioning, a study done on parents of children with type-1 diabetes, another chronic illness, found that the parents were likely to experience elevated levels of parental stress (Moreira et al., 2013). In another study done on families of childhood cancer survivors, it was found that, in families who were conflictive, individuals showed higher levels of depression and anxiety. In families who were cohesive, little psychological distress was reported (Ozono et al., 2009). Food allergies affect every area of a child's life and in turn their family's lives as well. If there is not a lot of family support and the child's food allergy is severe, this should cause the child to be more anxious than a child who has a strong family support system in place. Structural, organizational, and transactional characteristics of families may moderate a child's experience of anxiety.

Purpose of the Study

In the United States, eight percent of children have food allergies, and this number is on the rise (an 18% increase in prevalence from 1997 to 2007) (Chow, Pincus, & Comer, 2015; Ravid et al., 2015). The cause of this increase is unknown, but because of this, more research needs to be done on the psychological effects that food allergies have on children. Food allergies in childhood have been associated with "impairments in social, academic, psychological and family functioning and is linked with overall reduced quality of life" (Chow et al., 2015). If a link between food allergies, family functioning and anxiety is found, there can be research done into prevention efforts and therapies to combat this anxiety.

Hypotheses

Based on the research above, the following research question was proposed: Does family functioning and the severity of the food allergy predict anxiety in children with food allergies? In response to the question, the following hypothesis was made: Lower family functioning and higher severity of the food allergy will cause children with food allergies to experience more anxiety.

METHODS

Participants

The study included a national cross-sectional sample of children aged 8 to 18 with food allergies and their parents found through school records, allergist offices, and food allergy support groups. There were 22 participants who completed the survey, including 17 mothers and five fathers. 54.5% of these parents had a son with food allergies and 45.5% had a daughter with food allergies. Twenty of the participants were White, one was Black and one was bi-racial. Most of the families surveyed were of high socioeconomic status. Almost one third of the participants reported their income to be between \$100,000 and \$149,000. Only one family reported making less than \$25,000. 50% of the parents surveyed possessed bachelor's degrees. The survey was given online via *Qualtrics* survey system.

Materials

The survey given was a compilation of other surveys that have already been used and determined to be reliable and valid. First, demographic questions were asked: age, sex, race, ethnicity, family size, socioeconomic status (parental education and household income). There were 5 questions that determined food allergy severity: has the child experienced anaphylaxis, has the child been prescribed an epi-pen, has the child been diagnosed with a food allergy by a

doctor, has the child been to an allergist and has the child experienced symptoms of food allergies other than anaphylaxis (if two or more symptoms have been experienced, this was counted). Severity of food allergy was rated on a scale of 1 to 5 with 5 meaning that the food allergy is very severe and with 1 meaning that the food allergy is mild.

To measure child anxiety, the 5-item version of the *Screen for Child Anxiety Related Emotional Disorders* (SCARED) was used, which was reported to have a sensitivity of 74% and a specificity of 73% (Birmaher, et al., 1999). Possible scores range from 0-10. The higher the score, the more anxiety was present and a score of 3 or higher indicated the presence of clinical anxiety.

Family functioning was measured using the *Family Assessment Device* (FAD) which is a 12-question general functioning scale with possible scores ranging from 12-48 (Epstein, Baldwin, & Bishop, 1983). Higher scores indicate lower family functioning while lower scores equate to better family functioning. The measure was found to show good internal consistency with a Chronbach's alpha of 0.92.

Procedures

First, IRB approval was obtained from East Carolina University. After approval, surveys were sent to various food allergy support group members and allergists offices across the country. Participants completed a survey via Qualtrics anonymously online. The collected data was managed in an Excel spreadsheet and analyzed in SPSS.

RESULTS

Descriptive Statistics

68.2% of the children in the study had experienced anaphylaxis, which indicates that they had severe food allergies. Children who had experienced anaphylaxis were found to have much higher levels of anxiety (*Mean* = 3.27, *Standard Deviation* = 2.31) than children who had not (*Mean* = 1.43, *Standard Deviation* = 0.98).

Table 1

Descriptive Statistics

| Variable | Mean | Standard Deviation | Possible Range of Scores |
|-----------------------|-------|--------------------|--------------------------|
| FAD Total | 23.82 | 8.35 | 12-48 |
| Food Allergy Severity | 4.50 | 0.67 | 1-5 |
| Child Anxiety | 2.68 | 2.15 | 0-10 |

n=22.

For family functioning (FAD), the mean score was 23.82 and the standard deviation was 8.35. For food allergy severity, the mean score was 4.50 suggesting relatively high levels of food allergy severity within this sample. For child anxiety, the mean score was 2.68 on a screener that considers scores of 3+ to indicate significant anxiety.

Correlations & Hypothesis Testing

The only statistically significant correlation was between child anxiety and food allergy severity. The more severe the food allergy, the greater the reported symptoms of child anxiety. To test the hypothesis, a multiple regression was done with food allergy severity and family functioning predicting child anxiety. We also tested interaction effects. Overall the model was

statistically significant ($p = .05$). Together, family functioning and food allergy severity predicted about 18.9% of variance in child anxiety scores. Higher food severity and lower family functioning predicted more child anxiety. When examining each predictor's independent contribution, neither *Beta* was statistically significant. No significant interaction effect was found.

Table 2

Correlation Matrix

| Variable | FAD Total | Food Allergy Severity | Child Anxiety |
|-----------------------|-----------|-----------------------|---------------|
| FAD Total | 1.00 | -- | -- |
| Food Allergy Severity | 0.30 | 1.00 | -- |
| Child Anxiety | 0.40 | 0.45* | 1.00 |

n=22.

* Correlation is statistically significant at $p < 0.05$

DISCUSSION

This study examined relationships among food allergy severity, family functioning and child anxiety. We found that more severe food allergies caused higher levels of anxiety, but that family functioning was less of a contributing factor to the equation. This is contrary to what has been found with other chronic illnesses. Reasons for these findings may be attributed to the limited sample size in this study.

Limitations and Directions for Future Research

Statistical power was low. Only 22 participants were surveyed and most of the participants were affluent, moderately functioning, White families with children who had

relatively severe food allergies. As such, there may not have been sufficient variability in the family functioning score to show a moderating effect.

In the future, this study should be replicated on a larger scale with a more diverse population, including children with a wider range of food allergy severity and family functioning. With a larger sample, moderating effects of family functioning on the food allergy - child anxiety relationship may be evident.

Significance of the Findings

Children with food allergies experience high levels of anxiety. Because of this, something may have to be done in order to monitor this anxiety and make sure that it is not negatively affecting them in school and other important areas of their lives. Doctors and parents should be especially aware of children with food allergies' anxiety levels and report anything disruptive. Interventions such as individual, family or group therapy sessions may be helpful in managing this anxiety in order to prevent the onset of a clinical anxiety disorder.

Family functioning wasn't as influential in moderating anxiety in children with food allergies as was hypothesized. The reason for this may be due to the specific measure (FAD) that was used to measure family functioning. The lack of effect may also be due to the low sample size and homogeneous population surveyed. Thus, future researchers may want to continue examining the effects of family functioning on anxiety levels of children with food allergies.

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