



Letter

Coping and posttraumatic stress symptoms in children with food allergies

Introduction

Difficulties for children with food allergies (FAs) extend beyond physical health to include psychosocial challenges (eg, children with FAs are twice as likely to be bullied than their nonallergic peers¹). How children manage these challenges has yet to be determined. These ongoing challenges combined with the unpredictable nature of exposure to food allergens and severe allergic reactions have the potential to result in posttraumatic stress symptoms (PTSSs). To date, this has yet to be examined in children with FAs, but 12% of adults who had experienced anaphylaxis met diagnostic criteria for posttraumatic stress disorder (PTSD).² The current pilot study sought to describe coping, the prevalence of PTSSs, and the association between coping and PTSSs in children with FAs and to explore the effect of anaphylactic reactions and/or the number of allergens on coping and PTSSs.

Methods

Participants

Eligible participants were between the ages of 7 and 13 years, had at least 1 confirmed FA that required food avoidance and an anaphylaxis plan, were cognitively able to complete study tasks, and had a legal guardian provide written consent.

Procedure

Participants were recruited from a pediatric hospital after a food challenge. Children completed measures of coping and PTSSs. Medical records were abstracted for history of anaphylaxis and number of food allergens.

Measures

The How I Coped Under Pressure Scale is a self-report questionnaire (subscales: cognitive restructuring, social support, avoidance) that assessed children's use of coping strategies with regard to their FA management.³ The Child PTSD Symptom Scale yields a PTSS severity score, a determination of likely PTSD diagnostic status (based on *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* [DSM-IV], symptom criteria),⁴ and a determination of subsyndromal PTSD (endorsing 1 symptom from each DSM-IV category: reexperiencing, arousal, avoidance).⁵ In this study, children were asked to consider the problems presented on the Child PTSD Symptom Scale in terms of their challenges with food allergies during the past month.

Disclosures: Authors have nothing to disclose.

Funding Sources: This study was funded by The Children's Hospital of Philadelphia's Allergy Research Fund.

Statistical Analysis

Descriptive statistics were used to describe the types of coping used by children and the number of children who met criteria for a probable diagnosis of PTSD. Independent-samples *t* tests were conducted to examine differences in coping and PTSSs based on a history of anaphylaxis and the differences in coping based on significant PTSSs. Associations among coping, PTSSs, and number of allergens were analyzed using the Pearson bivariate correlations. Given the exploratory nature of this small pilot study, we also examined effect sizes to identify areas for future research.

Results

Participants included 25 children (76% participation rate). Table 1 lists the demographic characteristics of the study participants. All participants reported using all 3 types of coping to help manage FA challenges. Each type of coping was used with similar frequency: cognitive restructuring (mean [SD], 2.6 [0.7]), social support (mean [SD], 2.6 [0.9]), and avoidance (mean [SD], 2.7 [0.5]). No statistically significant differences were found for type of coping based on a history of anaphylaxis, but effect sizes suggested possible differences (eg, cognitive restructuring coping: Cohen *d* = 0.4, avoidant coping: Cohen *d* = 0.3, and support seeking: Cohen *d* = 0.2). The number of food allergens was not significantly related to coping ($r = 0.06$ – 0.24 , $P > .50$).

In examining PTSD prevalence related to FAs in our sample, results indicated that 2 children (8%) met the DSM-IV criteria for a probable diagnosis of PTSD,⁶ and 9 children (36%) met the DSM-IV criteria for subsyndromal PTSD.⁶ Children who had experienced an anaphylactic reaction had significantly higher PTSSs (mean [SD], 19.4 [5.4]) than children who had never experienced anaphylaxis (mean [SD], 10.8 [8.8]; $t_{23} = 2.1$; $P = .05$; Cohen *d* = 1.0; 95% CI, 0.0–2.0). No statistically significant differences were found for type of coping based on a history of significant PTSSs, but effect sizes suggested possible differences (eg, avoidant coping: Cohen *d* = 0.5, and support seeking: Cohen *d* = 0.6), with those with significant PTSSs using more coping of each type. The number of food allergens a child had was not significantly related to his or her reported PTSS for DSM-IV ($r = 0.17$, $P > .05$).

Discussion

The primary findings of this pilot study include the following: (1) children use multiple types of coping to manage food allergy, and (2) a significant proportion of children with food allergy may be at risk for PTSSs; those with a history of anaphylaxis be even more at risk for PTSSs. The associations among coping, anaphylaxis, and PTSSs warrant further investigation.

Table 1
Patient Demographics^a

Demographic	No. (%) of patients
Child sex	
Female	11 (44)
Male	14 (56)
Child race	
African American	1 (4)
White	20 (80)
Other	1 (4)
Multiracial	3 (12)
No. of allergens	
1	6 (24)
2	5 (20)
3–5	9 (36)
≥6	11 (44)
History of anaphylaxis	
Yes	5 (20)
No	20 (80)

^aChildren had a mean (SD) age of 9.6 (2.2) years.

Current results suggest that children use a combination of cognitive restructuring, avoidant, and social support strategies. The use of avoidant coping is particularly complex for children with FAs. Avoidance may be necessary to prevent additional exposure to their allergen; however, the use of avoidant coping can also be problematic to psychological health. Because adaptive coping in adults has led to reduced risk-taking behaviors and a decreased perceived burden of FAs,⁷ more research needs to be conducted to identify which strategies are most adaptive for children with FAs.

With more than one-third reporting significant PTSSs related to food allergy challenges, findings from this pilot study suggest that children with FAs experience fairly high rates PTSSs (compared with other medical conditions, eg, approximately 8% with human immunodeficiency virus⁸ approximately 7% with sickle cell disease⁸), with those experiencing anaphylaxis at higher risk. This finding may be related to the nature of the disease because it is necessary for children with FAs to implement avoidant and monitoring strategies to prevent an allergic reaction; however, these strategies can also contribute to PTSSs.^{9,10}

The small sample size limits the power and generalizability of results. Data were collected immediately after a food challenge, which may have been a stressful time for children to complete measures and could have influenced responses. This study relied on the children's self-report. Data from other sources may yield a more thorough understanding of how children manage their allergy challenges and how their FA affects their psychological health.

Conclusion

Although more research is needed, this pilot study identifies pediatric FA as a possible risk factor for PTSSs; medical practitioners

may want to consider integrating PTSS screening or preventive interventions into their practice.

Acknowledgments

We thank The Children's Hospital of Philadelphia's Allergy Research Fund for supporting this project. In addition, we thank Terri Brown-Whitehorn, MD, Megan O. Lewis, MSN, RN, CPNP, Paulette M. Devine, RN, Katie Romanski, RN, BSN, Yuran Kim Chi, RN, BSN, Danielle Cole, BS, and Kristen Kohser, MSW, for their contributions to this project.

Danielle Weiss, MS*

Meghan L. Marsac, PhD^{*,†,‡}*Center for Injury Research and Prevention
The Children's Hospital of Philadelphia

Philadelphia, Pennsylvania

†Perelman School of Medicine
University of Pennsylvania

Philadelphia, Pennsylvania

‡Department of Pediatrics
Kentucky Children's Hospital

College of Medicine

University of Kentucky

Lexington, Kentucky

meghan.marsac@uky.edu

References

- [1] Muraro A, Polloni L, Lazzarotto F, et al. Comparison of bullying of food-allergic versus healthy schoolchildren in Italy. *J Allergy Clin Immunol*. 2014;134:749–751.
- [2] Chung MC, Walsh A, Dennis I. Trauma exposure characteristics, past traumatic events, coping strategies, posttraumatic stress disorder, and psychiatric comorbidity among people with anaphylactic shock experience. *Comp Psychiatry*. 2011;54:349–404.
- [3] Ayers T, Sandler I, West S, Roosa M. A dispositional and situational assessment of children's coping: testing alternative models of coping. *J Pers*. 1996;64:923–958.
- [4] Foa E, Johnson K, Feeny N, Treadwell K. The Child PTSD Symptom Scale: a preliminary examination of its psychometric properties. *J Clin Child Psychol*. 2001;30:376–384.
- [5] Winston FK, Kassam-Adams N, Garcia-Espana F, Ittenbach R, Cnaan A. Screening for risk of persistent posttraumatic stress in injured children and their parents. *J Am Med Assoc*. 2003;290:643–649.
- [6] American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*. Washington, DC: American Psychiatric Association; 2000.
- [7] Peniamina RL, Bremer P, Conner TS, Miroso M. Understanding the needs of food-allergic adults. *Qual Health Res*. 2014;24:933–945.
- [8] Ingerski LM, Shaw K, Gray WN, Janicke DM. A pilot study comparing traumatic stress symptoms by child and parent report across pediatric chronic illness groups. *J Dev Behav Pediatr*. 2010;31:713.
- [9] Ehlers A, Clark D. A cognitive model of posttraumatic stress disorder. *Behav Res Ther*. 2000;38:319–345.
- [10] Marsac ML, Ciesla J, Barakat LP, et al. The role of appraisals and coping in predicting posttraumatic stress following pediatric injury. *Psychol Trauma*. 2016;8:495–503.