The impact of COVID-19 on food-allergy-specific anxiety: A cross-sectional survey of parents of children with food allergies in Canada

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Food allergy-specific anxiety (FAA)

COVID-19 pandemic
- e.g. risk of infection, public health measures, socioeconomic impacts

Biopsychosocial context
- e.g. food and housing insecurity, stressful life events, comorbidities, racism

Medical care
- e.g. emergency visits, oral food challenge, immunotherapy

Allergy-related factors
- e.g. allergy multiplicity, severity, child’s age

Allergy-related limitations on life

Health-related quality of life

Emotional distress

Anxiety

Emotions
- e.g. fear, irritability

Cognitions/worries
- e.g. possible allergen exposure, uncertainty about the future

Behaviours
- e.g. avoidance, overprotectiveness

Physiological hyperarousal
- e.g. tension, sleep disturbance

Outcomes
- e.g. parent and family functioning, child’s distress

Anxiety-related limitations on life
Objectives


2. To determine whether general and food-allergy-specific anxiety symptoms have been differentially affected by COVID-19.
Methods

Study Design
Cross-sectional online survey May-June 2020
Distributed through Food Allergy Canada, Metro Vancouver Anaphylaxis Group, Parent Webinar

Inclusion criteria
Parent or guardian of child with FA, consenting to participate and completing the full FAA questionnaire n=293 from all provinces, 92% mothers

MEASURES

FAA questionnaire (preliminary validation):
Impairment Measure for Parental food Allergy-related Anxiety and Coping Tool (IMPAACT)

FA-specific quality of life measure:
Food Allergy Quality of Life Parental Burden (FAQL-PB)

Medical and demographic information
Parent, child, and allergy-related factors

General anxiety symptom measures:
GAD-7, State-trait anxiety inventory (STAI)

COVID-19-related anxiety measures:
Items querying effects of COVID-19 on anxiety and FAA
Retrospective report for GAD-7 and IMPAACT

Analyses
• Associations between scores were evaluated with bivariate Spearman correlation. Groups were compared by paired two-tailed t-test or chi-squared test. Predictors of change in FAA with COVID-19 were determined by ordinal regression.
• IMPAACT was developed using inductive and deductive approaches. Psychometric properties including internal consistency, construct validity, test/retest reliability, and factor structure were assessed.
• Reflexive thematic analysis was applied to open-ended responses.
Differential impacts of COVID-19 on overall anxiety and FAA

- 66.7% reported **increased overall anxiety** due to COVID-19, whereas only 28.1% reported **increased FAA** ($p<0.0005$)
- Most respondents reported **unchanged** (29.5%) or **decreased** (42.3%) FAA

**Predictors of increased FAA (ordinal regression analysis):**
- Increased overall anxiety
- Number of FA
- Prior ER visits
- Non-nut allergies
## FAA-related qualitative themes

<table>
<thead>
<tr>
<th>Theme</th>
<th>Example</th>
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</thead>
<tbody>
<tr>
<td>Decreased worry about out-of-home allergen exposures</td>
<td>“It's been easier during quarantine because we are not going out to eat, not going to parties, not going to grandparents, not going to school, or anywhere that used to cause the anxiety about potential accidental allergen exposure.”</td>
</tr>
<tr>
<td>Lack of “safe” food availability</td>
<td>“The most difficult part is when all my son's 'safe foods' are out of stock. It isn't easy to just grab whatever is left on the shelves, as they usually have a 'may contain' label.”</td>
</tr>
<tr>
<td>Concern about health care system FA management</td>
<td>“We are on the waitlist for OIT to begin &amp; fear that this pandemic has delayed the chances of accessing it indefinitely.”</td>
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<tr>
<td>Risks of infection in ER</td>
<td>“I don't want my child to have any reaction at all during this time so we can avoid going to the hospital.”</td>
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FAA is weakly associated with general anxiety symptoms

Parents reported **impaired functioning** due to both:
1. Managing their child’s FA (median 4, IQR 3-4, 7-point scale)
2. Worry about the FA (median 3, IQR 2-4)

FAA on a visual analogue scale correlated **weakly** with general anxiety measures and **moderately** with FA-specific health-related quality of life.

<table>
<thead>
<tr>
<th>Measure</th>
<th>$r_s$</th>
<th>$p$</th>
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<tbody>
<tr>
<td>GAD-7</td>
<td>0.273</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>STAI-S</td>
<td>0.371</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>FAQL-PB</td>
<td>0.688</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>IMPAACT</td>
<td>0.707</td>
<td>&lt;0.0005</td>
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Impairment Measure for Parental food Allergy-related Anxiety and Coping Tool (IMPAAACT)

IMPAACT is a 28-item scale with high internal consistency (Cronbach’s $\alpha=0.96$) and 4-factor structure that queries specific aspects of FAA

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-COVID Mean ± SD</th>
<th>Current Mean ± SD</th>
<th>Cohen’s $d$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPAAACT</td>
<td>105 ± 35</td>
<td>89 ± 37</td>
<td>-0.44</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>GAD-7</td>
<td>5.4 ± 4.9</td>
<td>6.2 ± 5.7</td>
<td>0.15</td>
<td>0.011</td>
</tr>
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</table>
Conclusions and Future Directions

• Despite increased overall anxiety, most parents reported unchanged or decreased FAA associated with COVID-19-related restrictions. This may change over the course of the pandemic.

• More work is required to determine the effects of sociodemographic and systemic factors on FAA during COVID-19 (e.g. food insecurity, racism).

• Further studies should evaluate methods for identifying families requiring mental health support for FA management.
This is a longitudinal cohort surveillance study of vulnerable and general population children and their parents to rapidly identify mental health struggles and useful resources over a 9-month window beginning during the COVID-19 pandemic. We aim to guide scaling up or development of new resources to address unmet mental health needs in British Columbia.

Lead investigators: Drs. Evelyn Stewart and Hasina Samji

...stay tuned!