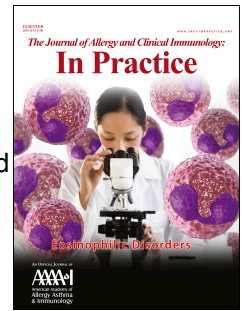


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Avoidant-Restrictive Food Intake Disorder (ARFID):

A Treatable Complication of Food Allergy

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Clinical Implications: Avoidant-Restrictive Food Intake Disorder (ARFID) is a treatable condition newly described in the DSM-5 that may affect many food-allergic patients, especially those with more than 2 food allergies, and may be an underrecognized complication.

CLINICAL COMMUNICATIONS

Food allergy (FA) is a public health problem affecting an estimated 8% of children (1). Although interventional treatment options are emerging, strict elimination of allergens remains the primary recommendation. Current treatment options may be used alongside, but do not supplant, elimination diets. Nutritional deficiencies, impaired growth, and adverse psychosocial impacts (e.g., impaired patient and parent quality of life, reduced social functioning and mood dysregulation) of FA are well established (2). In some cases, FA is associated with avoidance of tolerated foods, dysfunctional eating behavior and/or food aversion that extend beyond the medically necessary allergen avoidance diet (3). Such patients often struggle to regulate the balance between managing dietary precautions and maintaining adaptive feeding habits. Emerging evidence suggests that sensory input contributes to future feeding behaviors, and that the immune system contributes to this sensing system (4). Feeding dysfunction has been observed to occur with higher prevalence in FA children compared to healthy controls and compounds the risk for poor nutrition and adverse adaptation outcomes (5, 6).

In 2013, the Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5) introduced Avoidant-Restrictive Food Intake Disorder (ARFID) to replace and extend the DSM-IV diagnosis “feeding disorder of infancy or early childhood.” ARFID has 4 manifestations (A1 – A4) and is

considered generally responsive to intensive feeding therapy in young children (5). DSM-5 specifies that when ARFID co-occurs with another medical condition (and FA is explicitly mentioned in the DSM), it must pose additional impairment and warrant clinical attention. To date, there are few reports on the co-occurrence of ARFID and FA. Available evidence, however, suggests as many as 30% of patients receiving intensive feeding therapy also have FA, indicating that feeding disorders may be more prevalent within the food allergic population than the general population (7). This observation further supports the association of FA and ARFID. Here we examine the co-occurrence and family impacts of ARFID in a case series of patients evaluated in a tertiary pediatric FA clinic. We also propose practical guidance on how to delineate psychosocial impairment in children with FA and ARFID.

Over a four-month period from May to August of 2019 (prior to the COVID-19 pandemic), 92 patients ages 6 months to 18 years presented to clinic for a FA evaluation with an allergy specialist (B.P.V.). On the day of the visit, a licensed psychologist (K.B.P.) reviewed each patient's medical history and current concerns, which was followed by diagnostic confirmation of FA by the physician. The psychologist invited a subset of parents of children with probable or known IgE-mediated FA to participate in an additional assessment focused on feeding problems. Forty-eight caregivers (53.3%) completed this additional clinical interview. The feeding problems interview documented the patient's nutritional status, eating habits, and the impact of food allergy on the child and family. An additional 6 patients with FA were active patients in the feeding clinic and well known to the psychologist. The demographic information and growth data on these established patients was compiled. Because the feeding problems of these established patients were well-documented, these parents were not approached for clinical interview. Thirty-eight caregivers (41.3%) were not approached to participate due to a variety of factors, primarily scheduling conflicts and suspected misclassification of FA following physician consult. (Figure 1). Participants who completed the in-person screen were comparable to non-participants in child age, sex, growth parameters, average number of suspected or confirmed allergies, and comorbid atopic conditions.

Of the 48 interviewed parents, 42 completed the 25-item Feeding Impact Scale (FIS). This validated survey, scored on a 5-point Likert scale, has two parts: feeding impact on family (FIS-FAM, 13 items) and feeding impact on parent (FIS-PARENT, 12 items) (8). A subset of parents (n=6) did not complete the FIS due to extenuating circumstances (e.g., length of visit or scheduling conflict). Higher scores indicate greater impact of feeding-related concerns. Patients were classified as having ARFID based on DSM-5 criteria for ARFID subtypes A1-A4 . As noted by Eddy and colleagues (9), implementation of ARFID criteria varies with incomplete consensus on the diagnostic threshold for A4. We assembled a team of clinical and research experts in food allergy and feeding disorders at our site to define ARFID A4 criteria for categorizing patients with FA and applied these criteria in this exploratory study (Table E1).

Table 1 presents demographic and clinical characteristics of 54 children (age 9 months to 17 years): 48 who participated in the ARFID interview and 6 established patients in the feeding program. For the sample, growth parameters were generally normal. Thirty-four patients who met DSM criteria for ARFID A1-A3 and/or our proposed ARFID A4 criteria were classified as “probable ARFID”. These patients tended to have more than 2 suspected or reported FA, compared to non-ARFID group (Figure E1). In the probable ARFID group, the average FIS-FAM score was 35.7 ± 10.0 compared to 27.7 ± 7.5 in the non-ARFID group (Table 1). The average FIS-PARENT scores were 34.5 ± 12.5 and 29 ± 12.6 and in the probable ARFID and non-ARFID groups, respectively.

These observations suggest that, despite reassuring growth indices in this sample as a whole, the co-occurrence of ARFID may contribute to the burden of FA and complicate the assessment and treatment of children with FA. –The interview conducted by a clinical psychologist specializing in the assessment and treatment of ARFID in this preliminary investigation was not designed to be diagnostic. Nonetheless, parents of children with probable ARFID described in this report reported greater than expected psychosocial impact for FA alone (e.g. ritualistic/rigid eating behaviors reported by the family or child as distressing). Given the incomplete consensus on the definition of ARFID A4 criteria, we offer provisional A4 criteria to spur future research (9).

This study included a sample of convenience. Other limitations of this study include potential ascertainment bias and missing data. Thus, the proportion of probable ARFID cases in this series may not be representative of the general FA population. The findings suggest, however, that additional multidisciplinary research is warranted to define the maladaptive feeding behavioral profiles that exceed the expected level of psychosocial impairment in FA and meet the ARFID A4 criterion. Once developed, these defining behavioral profiles could be used to estimate the prevalence of ARFID manifestations in a broader sample of children with FA and continue development and testing of treatment models.

FA is a common problem in children that may adversely affect overall development and pose difficult challenges for parents. In some cases, FA is further complicated by extreme food aversion and dietary restriction (self- or parent-imposed) that extend beyond medically necessary dietary restrictions and meet criteria for ARFID. These additional maladaptive feeding behaviors add to the child's overall impairment, may result in nutritional deficiencies, and may foster dysfunctional parental accommodation and diminish family quality of life (6). Although there are no established guidelines for ARFID assessment and treatment when complicated by FA, successful intervention is likely to require a multidisciplinary approach to manage the medical and psychosocial nuances of each condition (5, 6, 8). Future research is needed to develop and test scalable interventions for children with FA and ARFID and their families. In the absence of clinical guidelines for managing FA complicated by prominent food aversion and excessive food restriction, consultation with a multidisciplinary feeding team with experience in ARFID may be beneficial.

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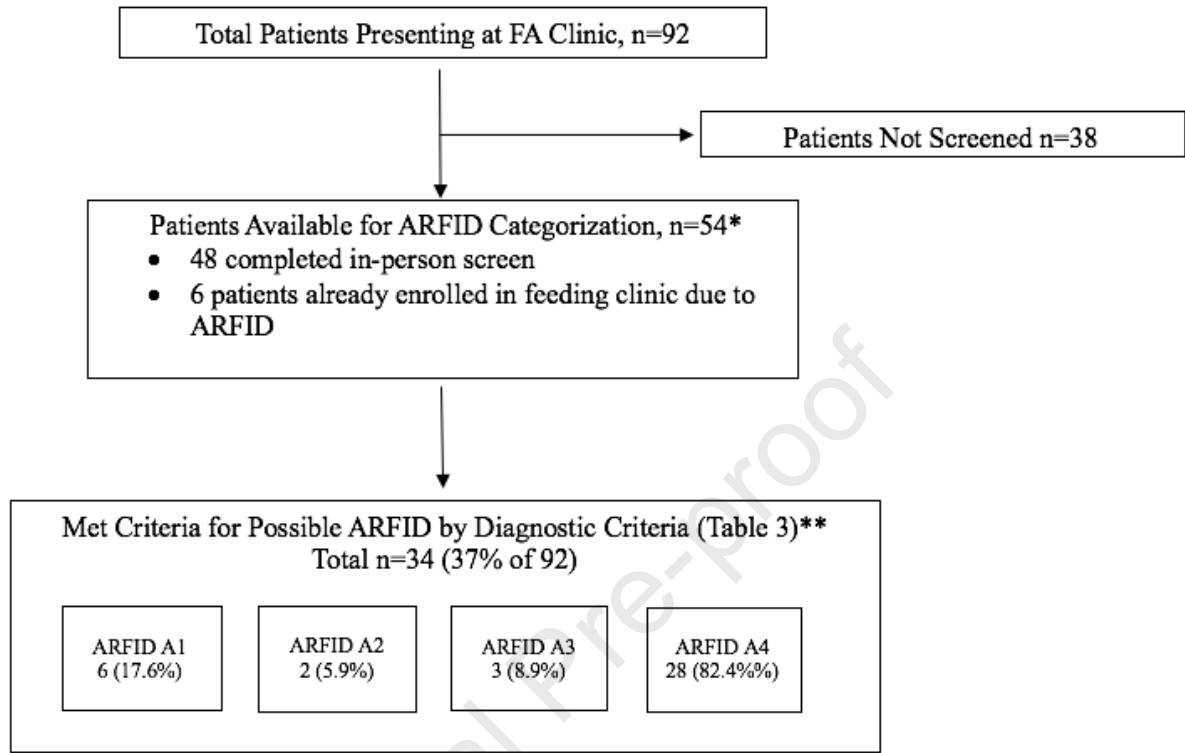
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Figure 1: Patient Disposition

Table 1. Demographic and Clinical Characteristics

Variable	Total (N=54)
Male, N (%)	36 (67%)
Female, N (%)	18 (33%)
Age, mean (range)	7.3y, (9 months - 17y)
Weight %ile, mean (range)	52% (0.8 - 99.2)
BMI %ile, mean (range)	57% (1 - 99.3)
Insurance type	
Private, N (%)	42 (78%)
Public, N (%)	12 (22%)
Reported food allergies, mean (range)	2.7 (1-10)
Co-occurring atopic conditions, N (%)	36/54 (67%)
FIS-FAM score, mean (range)	32.1 $\pm$ 9.7 (13-53)
Standard error of mean	1.3
95% confidence interval	32.1 $\pm$ 2.7
FIS-PARENT score, mean (range)	31.9 $\pm$ 12.7 (12-53)
Standard error of mean	1.7
95% confidence interval	31.9 $\pm$ 3.5

Figure 1. Patient Disposition



*6 patients were not screened during clinic as they had already been established in feeding therapy; they were included in the total patients as they met criteria for food allergy (n=54); **Some participants met more than criteria and therefore the sum of percentages does not equal 100%