Parent-child Interaction Treatment for Preschoolers with Feeding Disorders

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ABSTRACT

Background: This study examined the immediate outcome of Feeding Disorders (FD) in preschoolers referred to the family treatment program Cerco Asilo.

Method: 21 children (mean age [SD=1]: 39 months [1]; range 9-65 months) with a diagnosis of FD were included in the treatment for 24 weeks. Specifically, seven subjects were diagnosed with Infantile Anorexia (IA), nine subjects with Sensory Food Aversion (SFA), and five subjects with Feeding Disorder of Caregiver-Infant Reciprocity (FDCIR).

Results: The great majority of patients with SFA and with FDCIR resolved the FD, whereas children with IA did not respond well to the treatment.

Limitations: The study's main limitations are the relatively small sample size, and the lack of a control group.

Conclusions: Findings suggest that changes in the parent-child relationship could generally promote FD resolution, other than IA. These data may have implications for clinical practice suggesting the need to develop ad hoc intervention protocols tailored to children with IA and their families.

INTRODUCTION

No consistent diagnostic criteria exist to date for feeding disorders (FD) in infants and young children. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) (1) introduces the Avoidant/restrictive food intake disorder (ARFID) to replace the under-utilized category of "Feeding disorder of infancy or early childhood" of DSM-IV-TR (2). ARFID is a broad category that overlaps with anorexia nervosa in terms of restrictive food intake and the resulting underweight, but differs in psychopathology and reasons for restrictive eating. These include avoiding types of food based on their sensory characteristics (e.g., specific color or texture), limiting food intake to a small number of specific "safe" types of food because of perceived health consequences, apparent lack of interest in eating or food. Moreover, ARFID is typically not associated with disturbance of body image. The first critical criterion in the DSM-5 definition of ARFID is a persistent disturbance in eating that leads to significant clinical consequences, such as weight loss or inadequate growth, a significant nutritional deficiency, dependence on tube feeding or nutritional supplements to sustain adequate intake, and/or impaired psychosocial functioning, such as an inability to eat with others. Moreover, this disorder appears without mental or medical conditions and is not present due to the unavailability of food. The new criteria included in ARFID allow diagnosis of a FD also in very young children, but do not provide indicators to detect the degree of severity of the clinical picture, as well as indicators to predict the wide variety of the clinical evolution that range from the spontaneous resolution to a chronic disorder.

Other classification systems for FD in infants and young children are currently in use (3), among which the revised version of the Zero to Three's Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood (DC:0-3R) (4). According to the DC:0-3R, the umbrella term Feeding Behavior Disorder comprises six specific categories with different etiopathogenesis, management, and prognosis (see Box 1), but that share the fact that "the child does not regulate his feeding in accordance with

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physiological feelings of hunger or fullness." A distinction between FD that occur as an isolated problem (nonorganic FD) and FD associated with a concurrent medical condition (organic FD) is *thought to be* essential to the setting up of a tailored treatment (5). The prevalence of nonorganic FD among young children in the general population is between 10% to 25% (3), and encompasses a wide spectrum of severity that ranges from eating limited types or textures of food to having a potentially life-threatening FD that requires nasogastric tube feeding or other medical procedures. In fact, in a small proportion of cases (1-5%), and depending on disease severity and duration, FD may be associated with adverse consequences such failure to thrive (child's weight below the fifth growth percentile or weight loss crossing two major growth percentiles) (6), deficits in cognitive development (7), behavioral problems (8), and eating disorders in adolescence (9-12). Research on FD in early childhood has explored the contribution of both caregiver and child in the onset and evolution of feeding problems, focusing mainly on the link between parental feeding practice and styles and child's food intake and eating attitude (13, 14). Abnormal feeding attitudes used by the parent(s) may include force-feeding, under- or over-attentiveness to cues, inappropriate menu selection and portion size, lack of reinforcement of desired behaviors and inappropriate reinforcement of negative behaviors (15). Food refusal in children was positively associated with parental use of coercion or monitoring (16-18), and parent control of child feeding was found to decrease the child's ability to respond to internal cues of hunger and satiety (19-21). Moreover, feeding difficulties are a source of psychological stress for parents and interfere in the quality of the relationship with their child (22, 23). In fact, parents often become concerned about child's health and frustrated because of the lack of rewarding in their caregiving (13). According to this view, during early mother-child feeding interactions, the child who refuses the breast or retracts the first attempts at weaning frequently induces a negative representation in the parent of her/his parenthood through a primitive mechanism of symbolic equation: refused food = rejected parent.

Previous research demonstrated that an early intervention (24) performed by a multidisciplinary team (25) is the most effective treatment for children with FD. Moreover, a flexible protocol based on the child's and parent's characteristics and positive parental involvement contribute to improvement of feeding problems of children (26). For example, Cohen et al. (27) reported a positive outcome for the vast majority of 50 patients admitted to an interdisciplin-

ary day-treatment program for FD. In a similar vein, Greer and colleagues (28) observed an improvement in feeding behaviors of 121 children with FD that was associated with a significant reduction in caregiver stress following the intensive interdisciplinary treatment of their child.

Literature on the evolution of preschool children with FD without underlying medical disorders is scarce. Infants with refusal to eat during at least four weeks in their first year of age reevaluated at four years of age showed a persistence of feeding problems (71%) and/or the presence of hyperactive behavior (42%) (29), and continued to display problematic eating behaviors during primary school (30). Avoidance due to sensory characteristics of food may be a relatively stable trait and persist at least into preadolescence, as suggested by a prospective study that followed 120 children and their parents from 2 to 11 years (31). A longitudinal study that followed 72 not-treated patients with infantile anorexia from infancy *into childhood* revealed an improvement in the nutritional status for the majority of subjects, but the persistence of feeding problems, and the onset of anxiety and depressive problems, as well as oppositional behaviors and social difficulties (32).

Box 1. The six subcategories of feeding disorder in the DC: 0-3R

1. Feeding Disorder of State Regulation is diagnosed when the infant has difficulty reaching and maintaining a calm state during feeding (e.g., the infant is too sleepy, too agitated, or too distressed to feed). This disorder starts in the new-born period.

2. Feeding Disorder of Caregiver-Infant Reciprocity is characterized by a difficulty of the infant's affective engagement with the caregiver during the feeding and this may influence physical growth and dyadic interaction.

3. Infantile Anorexia: the infant or young child refuses to eat adequate amounts of food, does not communicate hunger and lacks interest in food, may display a significant deficiency in growth, not associated with developmental delay (13, 22, 32, 41).

4. Sensory Food Aversion is characterized by the child's refusal to eat specific foods with specific tastes, textures, and/or smells and the refusal occurs during the introduction of novel type of food. The refusal of specific consistence may lead to delay of oral motor development. After an initial aversive reaction, the infants usually refuse to continue eating that particular food and become distressed if forced to do so.

5. Feeding Disorder Associated with concurrent medical condition. The infant or young child readily initiates feeding, but shows distress over the course of feeding and refuses to continue feeding. The child has a concurrent medical condition that the clinician judges to be the cause of the distress.

6. Feeding disorder associated with insults to the gastrointestinal tract. Food refusal follows a major aversive event or repeated noxious insults to the oropharynx or gastrointestinal tract (e.g., choking, severe vomiting, reflux, insertion of nasogastric or endotracheal tubes, suctioning). This infant or young child consistently refuses food in one of the following forms: bottle, solids, or both. Reminders of the traumatic event(s) cause distress, and are manifested by anticipatory distress.

The aim of the present study is to provide benchmark data on the short outcome of a cohort of preschoolers with nonorganic FD who attended the day treatment program Cerco Asilo, at a tertiary care university hospital.

METHODS

DESIGN

An inception cohort of preschoolers with an FD diagnosis according to DC:0-3R were consecutively enrolled between July 2012 and December 2014 (T0) and included in the mental health program Cerco Asilo (Box 2). At the end of the program, 24 weeks later (T1), FD patients underwent a new clinical evaluation. The written informed consent from a parent of children was obtained. The research protocol was approved by the Institutional Review Board of the Clinical Research Institute for Child and Adolescent Neurology and Psychiatry.

Box 2. Cerco Asilo program

The therapeutic nursery school, Cerco Asilo, is an innovative Italian program, established to take care of the mental health and affective needs of preschool children with somatic, emotional and behavioral problems: it is not addressed to rehabilitation of specific symptoms (feeding, behavioral or developmental), but it focuses on parent-child relationships.

The program provides a "day treatment" format in which small groups of children with their parents participate in the different activities of the program, one day a week. The groups are distributed according to the age of children, and are mixed as far as the symptoms for which the children are referred. Parents are supported in the pivotal moments of caregiving (feeding, sleeping), as well as in play activities by a therapeutic team; in addition, relational groups for parents, play and educative groups for children are carried out. At the end of the assessment of children with feeding disorders, the team's members share their observations with parents, showing also short clips of the video to parents with the aim of providing support and information to improve their feeding patterns as well as to help the child reach his/her optimal feeding potential. Psychodynamic psychotherapies of the family complete the program.

The team is multi-professional: it is composed of child psychiatrists, psychologist, childcare assistant and social worker.

The general purpose of the program is to provide a structured, consistent and nurturing environment for children and parents. Parents are helped to widen their attitude toward the child, while keeping in touch with his/her emotional and psychological functioning. The goals of the Cerco Asilo program are agreed-upon with the parents and comprise:

1. addressing child's symptoms by promoting child's emotional development and improving his/her social abilities;
2. helping parents in the caregiving activities, with the aim of being more aware of their children's emotional needs;
3. developing intimate relationships between parents and children by improving trust and alliance between families and clinical team;
4. improving self-confidence in parents.

PARTICIPANTS

The sample comprised 21 children, the slight majority of whom were females (n=11; 52.4%). The mean age of participants was 39 months (SD±1; range 9-65 months). The main inclusion criteria were: diagnosis of a nonorganic FD and age below 6 years. The FD diagnosis was made according to the DC:0-3R classification and was integrated with empirical observations made by the multidisciplinary team during the program (Box 3). We diagnosed Infantile Anorexia (IA) in seven subjects, Sensory Food Aversion (SFA) in nine subjects and Feeding Disorder of Caregiver-Infant Reciprocity (FDCIR) in five subjects. Exclusion criteria included: presence or history of any other axis I diagnosis; neurological syndromes or focal neurological signs; anamnesis of premature birth (less than 37 weeks of gestation); significant sensory impairment (e.g., blindness, deafness); FD requiring nasogastric tube or percutaneous endoscopic gastrostomy (PEG).

Box 3. Meal time at Cerco Asilo

During meal time we were able to observe some behavioral features that characterize the eating attitudes of the children and of their parents:

Children with **Infantile Anorexia** display strong avoiding conduct of food intake during the meal time: the child shows oppositional behaviors in front of the food and very conflictual interactions during feeding, such as refusing to seat at table or to start to eat. Sometime the child seems hungry but fights against food, other times parents are concerned because the child never seems to have appetite.

For children with **Sensory Food Aversion**, on the contrary, meal time is usually welcome because this is the moment in which they are reunited with parents These children are encouraged by the presence of other children to taste new foods, sometime by imitation, other times accepting food offered by another child. This may be facilitated, maybe, by the emotional link created by sharing during play activities or group psychotherapies in the other settings of the program.

Finally, the mothers of the children who display a **Feeding Disorder of Caregiver-Infant Reciprocity** seem to enjoy the convivial atmosphere of meal time; they become less anxious when feeding their child, less focused on his/her intake of food; they seem encouraged by the example of other parents who might face other problems with their children and become able to recover a pleasant and playful interaction with their children; this change in the mother's approach facilitates the discovery or rediscovery of the social and emotional meaning of feeding.

ASSESSMENT

Physiological anamnesis with particular focus on early feeding milestones and possible food-related reactions (e.g., allergies, intolerances), remote pathological anamnesis concerning past pathologies, and recent pathological anamnesis were collected. This latter included a detailed evaluation of the onset, frequency, and situational deter-

minants of the FD. Moreover, medical record review to establish whether food refusal is linked to weight loss/failure to gain weight, or other *medical consequences* (e.g., bradycardia, anemia, specific nutritional deficiencies) was performed when available. Also, careful assessment to evaluate whether FD is linked to behavioral symptoms (e.g., oppositional problems, sleep disturbances, regulation difficulties) was undertaken. Familiar psychiatric anamnesis was gathered; parental history, as well as representations and emotions of the parents concerning their child were explored in order to shed some light on the parent-child relationship. In addition, parenting strategies and other factors that may trigger or maintain the FD, as well as parenting strengths and skills that can be used and reinforced in treatment were examined.

The procedures of assessment, developed during five outpatient sessions, were aimed to assign diagnosis according to the five Axes of DC:0-3R criteria (Box 4). The Axis I diagnosis was based on the decision tree of the DC:0-3R (33, 34). The feeding assessment was carried out through the observation of a videotaped naturalistic session of parent-child mealtime interaction in the clinical setting. The video was analyzed by the multidisciplinary team focusing on parent/child interaction, pacing and duration of mealtime, feeding environment, and child autonomy. Data obtained by the application of the Chatoor questionnaire (35) completed the diagnosis of the subtype of FD.

The Axis II was assessed via the Parent-Infant Relationship Global Assessment Scale (PIR-GAS) and was scored by the clinician who conducted the consultation. The multidisciplinary team also assessed the PIR-GAS on the basis of 10 minutes of videotaped parent-child interaction in order to reach a shared agreement (34, 36).

Axis V was used to evaluate the cognitive, emotional and social functioning of the child in spontaneous interaction with parents, in individual observation and in developmental tests (34, 37, 38).

Clinical observation was integrated with the administration of two parents' reports: the Parenting Stress Index (PSI) (39), and the Child Behavior Checklist 1½-5 (CBCL 1½-5) (40).

PARENTING STRESS INDEX
The PSI was administered to measure level of self-reported stress related to parenting. The PSI consists of 101 items, and parents rate their level of agreement with each statement on a 5-point Likert scale (5=strongly agree, 1=strongly disagree); higher scores indicate higher parenting stress. PSI items are divided into parent and child domains. Seven

subscales derived from 54 items of the parent domain assess stress resulting from parent characteristics (personality and psychopathology): depression, competence, parental attachment, spouse, social isolation, parent health, and role restriction. Six subscales derived from 47 items of the child domain measured stress resulting from child characteristics (i.e., temperament factors and parental expectations of the child): adaptability, demandingness, depression, distractibility/hyperactivity, acceptability, and reinforces parent. The total stress score is the sum of the parent domain and child domain scores.

CHILD BEHAVIOR CHECKLIST
The CBCL 1½-5 is one of the most widely used checklist consisting of 100 statements about the child's behaviors.

Each item describes a specific behavior and the parent is asked to rate the frequency of each behavior on a 3-point Likert scale (0, not true; 1, somewhat or sometimes true; 2, very true or often true). The measure provides scores for three summary scales (i.e., Internalizing, Externalizing and Total Problems). The Internalizing scale includes the syndromes of Emotionally Reactive, Anxious/Depressed, Somatic Complaints, and Withdrawn, while the Externalizing scale includes syndromes of Aggressive Behavior and Attention Problems. The syndrome of Sleep Problems in CBCL 1½-5 stands alone. The CBCL 1½-5 also provides scores for five DSM-Oriented scales (Affective Problems, Anxiety Problems, Pervasive Developmental Problems, Attention Deficit/Hyperactivity Problems, and Oppositional Defiant Problems).

After the initial assessment, participation in the Cerco Asilo program is agreed with parents on the basis both of the child's problems and the parent's perceived discomfort.

After 24 weeks (T1), all the clinical measures were performed again in order to evaluate: (a) The degree of FD resolution according to the DC:0-3R criteria; (b) The degree of modification in child's emotional and behavioral development; (c) The change in parent-child relationship.

STATISTICAL ANALYSIS

Continuous data were expressed as mean ± SD while categorical data were expressed as frequencies and percentages. Comparisons between groups were made using the analysis of variance (ANOVA) and the nonparametric Kruskal-Wallis ANOVA or the nonparametric Mann-Whitney test for continuous data and the Chi-square test for categorical data. When homogeneity of variances was not met a Welch ANOVA was performed. Comparisons within groups (T0 versus T1) were performed by the paired t test and the nonparametric Wilcoxon test for paired data. Data were analyzed using SPSS version 17.

RESULTS
BASELINE FEATURES

All the CBCL 1½-5 of the three groups showed no clinical median scores at T0 and no inter-group significant differences, but PSI scores reported very high levels of Life Stress Index as described by all the three groups parents (median score of 35.7 in IA group, 43.9 in SFA group and 31.0 in FDCIR group). Evaluations of Axis II (PIR-GAS) showed in all groups traits of a disturbed relationship (median score of 66.1 in IA group, 70.1 in SFA group and 59.0 in FDCIR group) IA and SFA children displayed an adequate level of emotional and social functioning (mean score of Axis V: 1.8), while the FDCIR group displayed a slight vulnerability to stress (mean score of Axis V: 2.3)

FINDINGS AT T1
Who resolved the feeding disorders?
Twelve children displayed a complete resolution of the FD symptoms: specifically, seven were affected by SFA, whereas five were affected by FDCIR. Differently, nine subjects did not improve in their FD symptoms: seven were affected by IA, and two by SFA.

Which is the most predictive factor related to the outcome of the feeding disorder?
Among age, sex, baseline value of the CBCL 1½-5, PSI, PIR-GAS, the five Axes, and type of FD, the only predictive factor for the FD resolution was the type of FD (Table 2). The relationship between type of FD and resolved disorder was not confounded by other factors considered: in fact, no significant difference was observed among the three groups of FD for the baseline values of other variables (Table 1).

Are there differences in the parent-child relationship and the child's development between the group that resolved the disorder (RFD) and the group that did not (NRFD)?
Splitting the sample between RFD children and NRFD children, we found at T1 that the RFD group displayed improvements in almost all of the dimensions exploring the area of the parent's representation. In particular, a statistically significant improvement was detected in the CBCL Total Problems Scale (p=0.018), Internalizing Problems Scale (p=0.027), Somatic Complaints Scale (p=0.02), and in the DSM oriented scales of Affective Problems (p=0.009) and Oppositional Defiant Problems (p=0.035), as well as in the subscale of Role Restriction (RO p=0.027) and Social Isolation (IS, p=0.014) of the PSI. RFD children evidenced also a significant improvement in the parent-child relationship (Axis II; p=0.001), and in the emotional and social functioning (Axis V; p=0.039). Also, the NRFD group displayed improvement in several CBCL and PSI dimensions, but some subscales remained approximately stable (Emotionally Reactive, Attention Problems, Anxiety problems of CBCL and Reinforces Parent, Depression of PSI), and others worsened (RO, IS and Health of PSI). Moreover, the NRFD children obtained a slight worsening in the PIR-GAS scores.

Table 1. *Characteristics of the child's emotional-behavioral functioning, parenting stress and parent-child interactions in the FD diagnostic subtypes at T0*

	Infantile Anorexia (n=7)		Sensory Food Aversions (n=9)		Caregiver-Infant Reciprocity (n=5)		P-value
Mean age, month (SD)	38.6 (19.2)		40.8 (14.7)		36.4 (12.0)		0.882
Males %	57.1		33.3		60.0		0.522
	M	SD	M	SD	M	SD	
CBCL total score	56.2	9.8	56.5	8.9	52.00	4.4	0.603
Internalizing Problems	61.5	9.5	55.3	8.7	55.2	4.11	0.316
Externalizing Problems	51.7	11.0	53.1	8.0	49.6	5.5	0.763
Emotionally Reactive	56.5	10.3	54.2	6.8	54.6	5.5	0.849
Anxious/Depressed	56.8	6.8	58.1	8.2	52.0	2.3	0.294
Somatic Complaints	64.5	7.9	60.7	6.1	59.8	10.1	0.552
Withdrawn	62.5	12.2	55.3	7.5	55.4	4.9	0.272
Sleep Problems	56.2	5.6	61.2	11.7	52.8	2.0	0.221
Attention Problems	52.5	2.5	54.9	7.0	55.8	5.7	0.606
Aggressive Behavior	55.3	11.6	54.9	6.1	50.8	1.1	0.562
Affective Problems	62.0	10.9	58.8	5.8	56.0	2.8	0.322
Anxiety Problems	54.7	10.0	59.9	9.8	52.4	3.0	0.286
Pervasive Developmental Problems (PDP)	61.8	11.4	56.3	7.2	54.4	5.3	0.315
Attention Deficit/Hyperactivity Problems (ADHD)	52.2	1.6	55.2	5.8	55.4	7.0	0.498
Oppositional Defiant Problems (OPD)	55.5	12.0	52.2	2.2	54.2	5.8	0.688
PSI total score	38.4	34.5	60.5	22.9	41.2	30.9	0.292
Child Domain	41.3	26.2	63.3	25.9	47.0	27.3	0.248
Adaptability (AD)	42.7	37.8	60.0	28.9	53.0	26.1	0.565
Acceptability (AC)	51.3	38.8	52.8	18.9	44.0	27.9	0.835
Demandingness (DE)	54.1	30.5	66.7	23.7	53.0	36.3	0.608
Mood (MO)	45.6	27.3	63.9	24.5	57.0	27.1	0.394
Distractibility/Hyperactivity (DI)	59.8	26.5	57.1	26.9	43.0	23.9	0.522
Reinforces Parent (RE)	45.7	24.6	617	27.4	64.0	23.3	0.381
Parent Domain	39.1	38.2	57.2	22.9	42.5	29.0	0.470
Depression (DP)	47.7	34.9	48.9	18.5	38.0	27.7	0.756
Attachment (AT)	28.8	30.5	57.7	24.6	42.0	29.5	0.145
Role Restriction (RO)	40.0	33.6	54.4	24.5	41.2	29.3	0.569
Competence (CO)	59.8	27.3	71.1	26.9	56.0	34.3	0.593
Isolation (IS)	42.1	42.4	60.5	28.5	62.0	20.8	0.467
Spouse/Parenting Partner Relationship (SP)	52.1	32.4	37.8	18.2	58.0	20.8	0.295
Health (HE)	43.6	43.7	60.1	31.0	70.0	12.7	0.323
Life Stress (LS)	35.7	37.2	43.9	35.0	31.0	21.9	0.769
Defensive Responding Score (DRS)	38.4	16.4	35.5	5.2	34.8	6.3	0.876
V Axes	1.8	0.8	1.7	0.5	2.3	1.1	0.610
PIR-GAS	66.1	12.2	70.1	12.6	59.0	19.6	0.399

Table 2. *Prognostic factors of resolution of feeding disorder*

		No resolution of feeding disorder (n=9)	Resolution of feeding disorder (n=12)	P- value
Males	%	55.6	41.7	0.528
Age	Mean (SD)	42.1 (10.0)	36.7 (12.9)	0.429
CBCL tot	Mean (SD)	56.00 (10.46)	55.18 (7.72)	0.931
PSI tot	Mean (SD)	49.14 (35.52)	52.73 (27.96)	0.540
Child Domain	Mean (SD)	54.14 (28.38)	55.00 (27.55)	0.581
Parent Domain	Mean (SD)	46.29 (38.47)	51.82 (26.95)	0.536
Life Stress (LS)	Mean (SD)	40.71 (34.69)	35.42 (30.11)	0.670
Defensive Responding Score (DRS)	Mean (SD)	38.00 (16.63)	36.08 (5.35)	0.911
Axis V	Mean (SD)	1.43 (0.53)	1.58 (0.79)	0.702
PIR-GAS	Mean (SD)	68.11 (13.52)	64.67 (15.29)	0.598
Infantile Anorexia (n=7)	%	100	0	
Sensory Food Aversions (n=9)	%	22.2	77.8	0.0007
Caregiver-Infant Reciprocity (n=5)	%	0	100	

DISCUSSION

The main aim of this research was to assess repercussions on feeding behaviors, emotional and behavioral features, as well as on the parent-infant relationship and parenting stress as a result of a multidisciplinary day treatment program for preschoolers with FD.

At T0, the three subgroups of FD (Infantile Anorexia - IA, Sensory Food Aversion - SFA, and Feeding Disorder of Caregiver-Infant Reciprocity - FDCIR) did not differ from each other with respect to emotional and behavioral psychopathology, parent-infant relationship and parenting stress. This finding is not in line with some literature describing IA as a serious FD subtype in terms of associated disturbances in child, parent and parent-child relationship, as well as evolution (13, 22, 32, 41, 42). However, the majority of the studies on FD in early infancy did not distinguish between different clinical subtypes of FD, but focused on IA only (32, 41), or on the general category of FD (22). Instead, a study comparing toddlers with IA and picky eaters (13) detected no significant difference between the two groups in terms of temperament ratings from their mothers, but more feeding conflict in IA than in picky eaters. Moreover, Lucarelli et al. (43) evaluated subjects with IA, Feeding Disorder Associated with Insults to the Gastrointestinal Tract (FDIGT) and SFA according to the DC:0-3R, and reported more severe psychopathology associated with

IA. In particular, an elevated dysfunctional parent-child relationship during feeding, with low dyadic reciprocity and high interactional conflict, was detected in IA. In addition, a psychopathological profile characterized by depression and dysfunctional eating pattern emerged in mothers of patients with IA only (43), confirming a possible role of caregiver symptomatic characteristics on IA onset and persistence (44). As far as outcome, a longitudinal study in children with untreated IA reported the persistence of eating difficulties, as well as the presence of internalizing and externalizing emotional-behavioral problems (32).

Overall, it is difficult to compare our findings with results from previous research on FD in early infancy since both the sample size and the assessment tools are different. For example, at T0 we used the feeding session as a qualitative observation aimed at counseling and supporting parents instead of a quantitative evaluation of mother-infant interaction during feeding, as performed by Lucarelli and colleagues (43). Furthermore, the PSI and the CBCL are parents' reports that provide information about parents' actual representation of their child. The absence of significant difference scores on these questionnaires among FD subgroups could be at least in part related to the recent onset of the FD at T0, which has not yet had the time to deeply impact on the parenting dimensions.

At the end of the intervention, we observed that the slight majority of the children (57% of the total sample; 12 subjects: seven with SFA and five with FDCIR) displayed a satisfactory resolution of the FD and that this finding was associated with significant improvements reported both by parents and clinicians, as evidenced by the results of the parents' reports (CBCL and PSI) and by the change on the diagnosis on Axes I, II and V of the DC:0-3R. Specifically, a significant reduction in the Internalizing and Total Problems scales, in Somatic Complaints syndrome scale, as well as in Affective Problems, and Oppositional Defiant Problems DSM-Oriented scales of the CBCL 1½-5 was detected.

It is worth noting that the Somatic Complaints syndrome scale comprises items directly or indirectly related to the food sphere (e.g., item 12: Constipated, doesn't move bowels; item 24: Doesn't eat well; item 45: Nausea, feels sick) and thus his improvement could reflect the FD resolution. In this direction, previous reports indicated a high level of gastrointestinal symptoms among children with FD (45, 46).

The significant improvement in the DSM-oriented Affective Problems and Oppositional Defiant Problems scales indicated that the resolution of FD is accompanied

Table 3. *Means (M) and standard deviation (SD) of the CBCL subscales scores, of the PSI subscale scores, of the Axis V and PIR-GAS values at T0 and at T1 in subjects with and without resolution of feeding disorder*

	No resolution feeding disorder					Resolutions feeding disorder				
	T0		T1			T0		T1		
	M	SD	M	SD	P-value	M	SD	M	SD	P-value
Tot CBCL	56.00	10.46	51.14	8.99	.275	55.18	7.72	49.91	7.12	.018
Internalizing Problems	59.00	10.71	57.29	9.32	.691	56.36	7.23	51.91	5.89	.027
Externalizing Problems	50.57	10.83	46.29	7.91	.206	52.82	7.21	48.18	6.21	.054
Emotionally Reactive	55.71	9.60	55.71	9.38	1.000	55.45	6.56	52.73	3.64	.247
Anxious/Depressed	56.29	6.85	54.86	4.67	.663	55.91	7.94	52.45	2.34	.130
Somatic Complaints	64.71	5.62	60.43	6.24	.158	60.09	8.04	56.27	5.04	.020
Withdrawn	63.29	12.55	59.29	8.99	.179	54.55	4.34	56.09	6.99	.330
Sleep Problems	56.57	4.96	52.71	2.56	.185	58.55	11.50	57.18	9.53	.554
Attention Problems	51.71	2.56	51.43	2.70	.848	56.36	6.71	54.27	5.78	.323
Aggressive Behavior	54.43	10.86	52.29	5.62	.326	54.18	5.72	51.27	1.74	.075
Affective Problems	61.29	10.06	54.71	3.95	.074	58.64	5.28	54.00	4.15	.009
Anxiety Problems	56.43	9.34	56.86	4.81	.917	56.45	9.53	54.36	4.72	.324
PDP (Pervasive Developmental Problems)	63.57	10.31	59.86	8.95	.191	54.82	5.49	54.09	4.74	.705
ADHD (Attention Deficit/Hyperactivity Problems)	51.71	1.70	52.29	2.43	.654	56.45	6.28	53.82	5.47	.106
OPD (Oppositional Defiant Problems)	54.57	11.22	52.57	6.37	.322	53.64	4.03	50.91	1.51	.035
Tot PSI	49.14	35.52	46.57	35.69	.556	52.73	27.96	40.55	25.77	.161
Child Domain	54.14	28.38	43.00	33.81	.226	55.00	27.55	46.33	27.08	.413
Parent Domain	46.29	38.47	50.14	37.31	.394	51.82	26.95	41.45	26.31	.188
Adaptability (AD)	51.29	41.41	48.00	42.72	.455	56.25	26.38	52.17	21.99	.590
Acceptability (AC)	66.29	28.49	53.57	32.62	.409	47.08	22.61	46.25	28.61	.931
Demandingness (DE)	55.57	31.84	40.86	42.31	.436	61.25	29.47	53.83	27.30	.315
Mood (MO)	56.29	27.99	54.43	33.45	.816	60.42	25.54	60.83	26.18	.961
Distractibility/Hyperactivity (DI)	55.57	27.94	36.71	27.81	.056	52.83	27.60	39.25	22.08	.186
Reinforces Parent (RE)	59.29	24.90	59.29	25.57	1.000	60.00	25.85	56.67	31.86	.770
Depression (DP)	52.00	30.82	52.14	24.64	.984	45.83	23.24	50.42	23.59	.471
Attachment (AT)	43.71	32.40	36.57	26.66	.486	50.00	27.47	36.75	30.44	.058
Role Restriction (RO)	38.57	28.39	53.00	34.25	.160	51.36	27.94	32.73	25.63	.027
Competence (CO)	66.29	29.78	54.29	33.35	.252	62.50	30.71	60.42	26.41	.748
Isolation (IS)	42.71	38.03	53.71	32.99	.186	65.00	24.59	50.83	28.43	.014
Spouse/Parenting Partner Relationship (SP)	47.14	32.26	50.71	37.80	.659	45.83	22.65	43.33	28.55	.718
Health (HE)	48.57	43.28	56.29	39.37	.272	62.58	26.54	59.67	26.55	.461
Life Stress (LS)	40.71	34.69	27.14	23.07	.503	35.42	30.11	44.17	28.67	.270
Defensive Responding Score (DRS)	38.00	16.63	35.00	10.68	.413	36.08	5.35	33.33	5.85	.131
Axis V	1.43	.53	1.14	.38	.172	1.58	.79	1.25	.62	.039
PIR-GAS	68.11	13.52	62.89	5.60	.116	64.67	15.29	73.00	11.29	.001

by reductions in both internalizing and externalizing symptoms. Previous literature emphasized that school children with selective eating experienced anxiety problems (46, 47), obsessional thoughts or compulsive behaviors that did not involve food, social and school difficulties, as well as elevated parent-child conflict during mealtime (47). We could therefore speculate that an appropriate and timely intervention is crucial to reduce the potential risk for developing psychopathological problems other than FD. Analogously, the significant improvement in the parent-child relationship (Axis II) displayed by groups that resolved the disorder would contribute to prevent eating disorders later in life, since negative affect at mealtimes, struggles with food, and eating conflicts in early childhood predicted eating problems in adolescence (10). However, large longitudinal examinations on young children with FD,

followed up to adolescence or adulthood, are warranted in order to better predict which characteristics of child, parent and parent-child relationship are related to future psychopathological problems.

Moreover, after treatment, mothers of children in the RFD group obtained statistically significant reductions in Role Restriction (RO) and Isolation (IS) subscales scores of PSI. These data indicated that the resolution of FD was associated with a considerable reduction of the stress experienced by mothers related to their sensation of being controlled and dominated by the child's demands and needs, as well as to perceived social isolation from private or community resources (39).

Therefore, for the RFD group of children, the Cerco Asilo treatment resulted in a beneficial effect not only for the child's feeding pattern, but also for a constellation of behavioral/emotional difficulties and parenting stress that, even if they fail to reach the threshold for clinical significance, could interfere with parent and child well-being.

In our cases, FD was diagnosed as a huge problem without comorbidities on Axis I; parents who seek professional help, often on the advice of their pediatrician, agreed to be included in the program because of their perceived stress; the concern about feeding relationships influences negatively both the representations of their parenthood and the relationships with the children. The Cerco Asilo program is focused on the parent-infant relationship and the emotional needs of the child and even if the intervention is not specifically target on FD, the presence of two feeding session (the snack at child's arrival and the lunch) allows the team to share with parents this crucial moment and to be present during the regulation and the negotiation of the interactions between child and parents. This kind of support, recommended in every challenge of the caregiving, in our experience resulted effective for FD related to a lack of Caregiver-Infant Reciprocity and for the majority of FD characterized by Sensory Food Aversions.

By contrast, nine children (43% of the FD sample) did not improve as far as the feeding problems are concerned (Not Resolution Feeding Disorder Group - NRFDG), and at T1 these children still meet criteria for a FD; they were suffering mainly from IA except two subjects with SFA. In our cases, these children seem apparently less influenced in their eating habits by the changes of the relational environment, although they display an enthusiastic participation at all the other activities of the program. In particular, during mealtime the tendency to postpone food intake, to be selective and/or picky eaters as well as to playing with food persist in these children. Consequently, the quantity

and quality of food intake does not change significantly after the treatment. Conversely, some behavioral/emotional improvements such as a reduced avoidance of eating situations, the ability to sit properly at the dinner table and to enjoy the conviviality of the meal are detected in the NRFDG patients after the Cerco Asilo program. Probably these children, even if very young, would need to integrate the program with individual play or psychotherapy in order to transform and symbolize their anxieties about food. The findings of the parent's reports (CBCL 1½-5 and PSI) associated with the slight worsening of the PIR-GAS scores confirmed that these parents, even if recognizing some improvement in the child's behavior, continued to perceive their parenthood frustrating: this make us alert about the course of parent-child relationship.

Previous reports described subjects with IA as having a peculiar temperament characterized by irregularity in the feeding and sleeping patterns (13), a high level of distress and difficulty in recovering in response to separation from their mothers (48). A difficult temperament and internalizing problems in the clinical range of the CBCL 1½-5 were also reported in IA patients (43). At the same time, a high physiological arousal consisting in low vagal activation was described in patients with IA: on the one hand, this feature supports exploration and a good cognitive functioning of children with IA in spite of their poor nutritional state, but on the other, it interferes with the capacity of relaxing and experiencing hunger (42). Therefore, a treatment focused not only on the parent-child relationship, but also on the child's special temperament and caregiver psychopathology should be planned for IA children (49).

On the basis of our results, even if the new criteria for ARFID (1) allow to detect also very young children with a feeding disorder, the different subtypes of FD individuated by the DC:0-3R (4), further confirmed by longitudinal studies that showed various outcome depending on FD subtype (32, 47), seem to be useful to assist clinicians in tailoring clinical management of FD in early childhood.

In particular, pediatricians and primary care structures should not underestimate not only subjects who fall off the growth curve (only 11.1% of toddlers with an eating problem) (50), but also children whose parents experience persistent difficulty and stress feeding them. In this way, a stable FD in early childhood, as well as later eating, behavioral, and emotional difficulties could be prevented.

Little is known about patient and parent variables that influence the outcome of a FD. A recent report that evaluated 49 subjects aged 3–30 months with feeding or other disorders (sleep and behavioral disorder) revealed

frequency and intensity of behavioral problems, fears, and the lack of father implication in the consultations as factors predicting the inefficacy of the therapy (51). The current research identified the subtype of FD diagnosis as the only predictor of outcome after Cerco Asilo multidisciplinary treatment. In other words, an intervention focused on the parent-infant relationship appeared to be beneficial for patients with FDCIR, and for the majority of subjects with SFA; by contrast, it was not effective for children with IA.

This study shows preliminary results that require caution in interpretation because of the absence of a not-treated control group, as well as the small size of the sample. The first aspect is related to ethical considerations: the severity of FD in early childhood in terms of possible physical and psychological adverse consequences, as well as parents' worry, require a timely intervention. Therefore, FD patients who cannot be treated in this program were not placed in a waitlist group, but referred to other therapeutic options available. The latter drawback is mainly attributable to the relatively low prevalence of FD diagnosis in our patients; in fact, even if many children who are referred to our Center for other problems displayed associated feeding difficulties, only in a few cases we were able to assign a full diagnosis of FD according to DC:0-3R. Moreover, our data do not definitively answer the question of whether the improvements obtained with Cerco Asilo program continue to be maintained after discharge: ad hoc periodic follow-up should be planned in order to verify this issue. Finally, the current investigation did not take into account how the characteristics and behaviors of parents influence children's responses to intervention: future studies should integrate the child's evaluation with the parent's evaluation in order to analyze family factors that appear to be relevant to treatment changes.

Despite the above-mentioned limitations, this study adds to the limited literature on early FD by improving the knowledge on "what works for whom" in FD, and therefore helping to address each child to the most appropriate program for him/her.

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