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BEHAVIORAL FEEDING DISORDERS IN INFANTS AND CHILDREN

by

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Submitted in Partial Fulfillment of the Requirements for the Masters of Science

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By

Michelle Whitlatch

A Research Paper Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science

in the field of Communication Disorders and Sciences

Approved by: Valerie Boyer, Chair Kirstin Schaper

Graduate School

Southern Illinois University Carbondale

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Introduction

Behavioral feeding disorders in infants and children constitute a broad spectrum, ranging from mild issues that do not involve major health threats, to severe issues such as malnutrition and the need for enteral feedings. Due to a high prevalence and the essentiality of early detection and treatment of feeding disorders, this literature review was written to discuss the definition, prevalence, effects, types, environmental factors, and treatment options of pediatric behavioral feeding disorders.

Definition

To understand the definition of behavioral feeding disorders, one must first have an understanding of what constitutes feeding disorders and the difference between organic and nonorganic etiologies. According to Shore and Piazza (1997), the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) defines Feeding Disorder of Infancy or Early Childhood (FD) as a "persistent failure to eat adequately, as reflected in significant failure to gain weight or significant weight loss over at least one month" (p.1). Other qualifications include no gastrointestinal or other general medical condition, no lack of available food, no other mental disorder, and an onset occurring earlier than six years of age (Shore & Piazza, 1997).

Organic etiologies are defined as structural or functional abnormalities that affect physiology, while nonorganic etiologies, or behavioral feeding disorders, are defined as "feeding difficulties resulting from psychosocial difficulties (poor environmental stimulation, dysfunctional feeder-child interaction), negative feeding behaviors shaped and maintained by internal or external reinforcement (selective food refusal, rumination), or emotionally based difficulties (phobias, conditioned emotional reactions, depression)" (Williams, Riegel, & Kerwin, 2009, p. 126). However, it can be difficult to label feeding issues because most children have multiple components to their feeding disorder. For example, children with organic feeding disorders may still present with behavioral feeding problems after the organic causes have been resolved. It should be noted that organic and nonorganic causes can occur alone or in combination.

Because of the complex nature of defining feeding disorders, best practice indicates that speech- language pathologists (SLPs) should collect information from various sources such as parental reports, previous medical reports, and a medical evaluation in order to determine the presence or absence of a feeding disorder and the etiology.

Prevalence

Behavioral feeding issues occur across various disorders and disabilities. 80% of individuals with severe and profound intellectual disabilities reportedly exhibit behavioral feeding issues (Matson, Cooper, Mayville, & Gonzales, 2006), and 70% of children with autism have been reported to have selective eating habits (Volkert & Petula, 2010). 15% of children with Gastroesophageal reflux disease (GERD) have feeding disorders, some of which include food refusal and food selectivity (Roche, Martorana, Vitello, Eicher, & Tricia, 2008). Another investigation reported that feeding disorders have been estimated to occur in as many as 45% of children who develop normally (Linscheid, 2006). It is important that SLPs are aware that behavioral feeding issues can manifest in all populations and can vary in appearance depending on the disorder and the individual child.

Effects

When an individual consumes an inadequate amount of food, many harmful results may occur. These effects consist of, but are not limited to, weight loss, malnutrition,

lethargy, impaired mental or physical development, and death. It has been reported that a disruption in normal parent-child mealtime interactions can often occur and, in extreme cases, can cause malnutrition and dehydration (Shore & Piazza, 1997). In these cases, medical interventions such as enteral feeding by nasogastric or gastronomy tubes might be necessary. Although feeding tubes yield positive short term effects, medical management alone does not treat the behavioral aspect of the feeding disorder (Shore & Piazza, 1997). In contrast, extended enteral feedings can not only negatively affect the development of normal oral feeding but can cause more behavioral feeding issues to arise in regards to oral food consumption (Shore & Piazza, 1997).

The clinical implication of this is that it is critical for SLPs to identify behavioral feeding disorders as soon as possible to minimize the devastating effects that it can have on a child physically, mentally, emotionally, socially, and developmentally.

Environmental Factors

Numerous environmental factors can have an effect on the development and maintenance of behavioral feeding disorders such as inappropriate behaviors maintained by positive reinforcement, inappropriate behaviors maintained by negative reinforcement, forced feedings, and failure to introduce solids at the appropriate age. Behaviors such as spitting up food, throwing food, and crying are often maintained by positive reinforcement such as receiving parental attention through bribery (Shore & Piazza, 1997). Behaviors are also maintained by negative reinforcement such as removal of a cup when thrown and replacing it with a bottle or termination of meal time due to throwing food. Failure to introduce the child to solids at the appropriate age may result in eating skills that are delayed (Shore & Piazza, 1997). Forced feedings can cause the child to associate eating with internal stress and stress expressed by caregivers.

SLPs must ensure that, not only do they understand the different types of reinforcement and why behaviors are maintained, but also that parents understand the maintaining aspects of their child's behavior.

Types of Behavioral Feeding Disorders

Many types of behavioral feeding disorders have been documented, including but not limited to, food refusal, selectivity or avoidance based on sensory features, neophobia, Pica, Rumination disorder, functional dysphagia, and food avoidance emotional disorder (FAED).

Food refusal can be defined as "failure to orally consume enough calories to maintain a weight to height ratio equal to or greater than the fifth percentile. This also includes children with adequate growth but who received supplemental tube feedings" (Williams et al., 2009, p.125). Many feel that the criteria and descriptions for this disorder are vague and confusing and that there should be five categories of food refusal behaviors (Bryant-Waugh, Markham, Kreipe, & Walsh, 2010). These categories include learning-dependent food refusal, medical complications related to food refusal, selective food refusal, fear-based food refusal, and appetite awareness and autonomy based food refusal. Learning-dependent food refusal is when a child has developed food refusal as a result of their behaviors being positively or negatively reinforced (Bryant-Waugh et al., 2010). Medical complications related to food refusal could range from under developed oral-motor skills to a dangerously low weight due to lack of nutrients (Bryant-Waugh et al., 2010). Selective food refusal can be defined as having preference for a certain color, texture, of category of food, while fear-based food refusal can be defined as a fear of eating due to association with pain, choking, or vomiting (Bryant-Waugh et al., 2010). Autonomy-based food refusal is often the result of a caregiver who has tried to force or control what, when, and how much the child will eat (Bryant-Waugh et al., 2010). The rationale for these five categories is that many feel that the literature suggests that different intervention strategies are required to treat children that fall into each category (Bryant-Waugh et al., 2010).

Bryant-Waugh et al., (2010) stated that "Although the proposals put forward by these authors are theoretically appealing, and their suggestions on how to help move the field forward through collaborative research are sound, there are currently insufficient data to validate the proposed food refusal categories" (p.102).

Selectivity or avoidance based on sensory features includes individuals who select or avoid certain foods based on smell, texture, taste, or temperature (Bryant-Waugh et al., 2010). These children, for example, may refuse any foods that are red (e.g., tomatoes, ketchup, apples, strawberries, etc), solid (e.g., regular food or mechanical soft food), or cold (e.g., milkshakes, orange juice, cottage cheese, etc). Other children will only accept food based on the packaging or only accept one brand of food. Neophobia, defined as a fear of trying novel foods to expand their dietary repertoire is different from selective eating, a refusal of foods that may be recognizable to the child, and when present can complicate the introduction of new foods (Bryant-Waugh et al., 2010).

Pica is described in the literature as a feeding disorder in which the child consumes items that are not considered food and contain no nutrients for duration of at least one month (Bryant-Waugh et al., 2010). Requirements for this disorder also specify that the ingestion of these items must be inappropriate for the individual's developmental age, and the individual must be a minimum of two years of age. Although Pica is currently considered to be a feeding disorder that originates during infancy, childhood, or adolescence, many reports indicate that Pica is not identified until adulthood (Bryant-Waugh et al., 2010). Pica often occurs in individuals diagnosed with mental retardation, pervasive developmental disorder, and schizophrenia. In order for a diagnosis of pica to be made, it must occur as an isolated form of psychopathological behavior, and if it co-occurs with another mental disorder, it must be "sufficiently severe to warrant independent clinical attention" (Bryant-Waugh et al., 2010).

Rumination disorder occurs when an individual repeatedly regurgitates swallowed or partially digested food, which they then re-chew and swallow or expel. Similarly to pica, rumination disorder is classified as a feeding disorder of infancy or early childhood, but the disorder occurs across a wide range of ages. Also, the disorder occurs most often with pervasive developmental disorder and mental retardation, often for purposes of self-stimulation (Bryant-Waugh et al., 2010).

Functional dysphagia, or globus hystericus, occurs when children are afraid to swallow, particularly solid or chunky consistencies, for fear of choking or vomiting. These children may have had a traumatic eating experience that has triggered the phobia, or the child may have made an irrational association between eating and choking/vomiting that has caused the phobia (Bryant-Waugh et al., 2010). This can lead to a limited consumption of food which can cause a reduction in weight.

SLPs should be familiar with the behavioral feeding disorders listed above as well as many others. Familiarity with several types of behavioral feeding disorders is important in detection, awareness of types of behaviors that might be exhibited, and choosing a treatment plan for the child. Knowledge of the type of feeding disorder that the child is exhibiting will allow the clinician to draw on personal experience in treating the disorder as well as refer to empirical evidence on the treatments that have been reported to be the most effective.

Assessment

Many tools for assessment have been reported in the literature. Assessment of a pediatric feeding disorder can be accomplished by interviews, parent/child interaction observations, and standardized questionnaires.

Background information supplied by the referral source and interview information obtained from the primary caregiver are perhaps two of the most valuable sources of information when planning an individualized behavioral feeding intervention. Information that is obtained from the referral source can be used to understand the nature, history, and most appropriate treatment for the feeding problem. Having a full understanding of the child's history and disorder will allow the clinician to make informed decisions about the direction of treatment. For example, in one study, 66% of the behavioral feeding disorder cases were either organic or primarily organic in nature (Shore & Piazza, 1997). Therefore, immediately starting therapy in these cases would not be effective or ethical. It would be critical to first resolve the medical complication that is causing the feeding disorder. Once the medical complication has been resolved, behavioral feeding options could assist in eliminate any residual feeding concerns.

Additional information which can assist in determining organic components of feeding issues can come from related medical and nutritional information. Verbal or written information obtained from the referral source is helpful to determine the child's current level and means of nutritional intake (Linscheid, 2006). As stated previously, it is important to determine if a full medical evaluation has been given to rule out physiological determinants and to provide clues as to the origin and possible maintaining variables of the feeding issue (Shore & Piazza, 1997).

Parent interviews are often employed as a primary source of assessment data (Linscheid, 2006). During this interview, it is helpful to record information on the types, textures, and variety of foods currently consumed by the child. Food diaries can be helpful to ensure that the caregiver

is reporting accurate information. Food diaries contain information on the types, textures, and variety of foods that the child is currently consuming. A three to seven-day account is most preferred, but, typically, parents can give an accurate verbal report of what their child has eaten over the past few days (Linscheid, 2006). Food diaries allow the clinician to determine changes that should be made in order to facilitate changes in the child's eating habits. For example, in one particular case study, a mother reported that it was taking two to three hours per meal to feed the child a half of a jar of baby food (Linscheid, 2006). During the interview, the mother was asked about her child's consumption of liquids. It was found that her child consumed ¾ of a gallon of milk a day, the equivalence of 1800 calories (Linscheid, 2006). This made treatment easier, as it mainly consisted of lessening the amount of caloric intake obtained through liquids.

Feeding schedules are important to obtain for every child regardless of if they receive their caloric intake by mouth or tube feedings. If the child is receiving calories from tube feedings, it is important to document if the child has ever eaten by mouth, how long the tube has been in place, and the type and number of calories received via artificial feedings (Linscheid, 2006). It should also be noted if the child receives an infusion pump, which administers calories slowly throughout the day, or bolus feedings, which are given at periodic intervals throughout the day. This is important to document because if the child has never eaten by mouth, they may not develop the sense of hunger that allows them to associate eating with the cessation of hunger. It is critical to know if a child experiences the sensation of hunger because it is an indicator of treatment success and treatment duration (Linscheid, 2006).

Another piece of information that should be obtained during the interview is a report of mealtime behavior and behavioral management techniques. This information can help to determine treatment necessity, aggressiveness, and setting. For example, it would be useful to the

SLP to know what types of behavior, such as hitting, turning of the head, or crying, might be seen during assessment and treatment sessions. It would also benefit the SLP to have knowledge of how the caregiver currently handles the mealtime behaviors in order to know what attempts have been made to remediate the issue and what techniques have and have not been successful (Linscheid, 2006). Parent reports can also help in determining how aggressive the treatment should be, and if treatment should be conducted on an inpatient or outpatient basis. This information can aid the SLP in making treatment technique decisions and also allow the SLP to educate the caregiver on different techniques that could be implemented more effectively in the home (Linscheid, 2006).

Parent/child interaction scoring systems are beneficial to research but are not as useful for clinical practice. Standardized and normative based instruments, such as the parent/child interaction scoring systems, are useful for describing the incidence of feeding problems in a population and for describing the general nature of the feeding problem but are not as useful for designing a specific treatment plan (Linscheid, 2006). The usefulness of these scoring systems is limited because, while they do give insight to the nature of the feeding problem, they do not give insight for specific treatment planning. Also, the information provided by the scoring systems could easily be obtained, with even more detail, from an interview with the caregiver (Linscheid, 2006).

The Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV) is a manual that is published by the American Psychiatric Association. This manual lists all mental health disorders occurring in adults and children, and it also lists known causes, statistics in terms of age at onset, gender, prognosis, and research on the most optimal treatment options.

The DSM-IV is widely used to determine the presence of a pediatric feeding disorder, but many clinicians feel that the DSM-IV is not sufficient in making a diagnosis (Shore & Piazza, 1997).

According to Shore and Piazza (1997), the DSM-IV defines Feeding Disorder of Infancy or Early Childhood as a "persistent failure to eat adequately, as reflected in significant failure to gain weight or significant weight loss over at least 1 month" (p. 1). The DSM-IV also states that onset must be before six years of age, with no gastrointestinal or other general medical condition, no mental disorder, and no lack of food available.

One major problem with this classification is that many feeding issues in infants and children have both behavioral and medical components. Additionally, children with medical conditions associated with feeding disturbances often develop aversive learning histories that result in behavioral problems. Clinicians feel that there is a need for revision of the DSM-IV and that greater clarity of terminology and subtypes of feeding and eating problems in infants and children would be beneficial. According to Shore & Piazza (1997), clinicians often classify a pediatric feeding disorder as a child's inability or refusal to eat or drink to adequately maintain their health, regardless of etiology.

SLPs should be aware that there are many options available for collecting information to assist in making a diagnosis for behavioral feeding disorders. Although there are advantages and disadvantages to each method, there are several options available that can be tailored to meet the needs of individuals on a case by case basis.

Treatment Options

Developing treatment protocols for children with behavioral feeding disorders can be challenging due to the fact that behavioral feeding issues are not homogenous. No two children with behavioral feeding disorders are exactly alike. Also, present behavioral feeding challenges might be constantly changing or new undesirable behaviors might arise during treatment. The following ideas are treatment options that can be considered for clients with various behavioral feeding disorders.

Positive reinforcement is the most common component described in the majority of intervention studies (Williams, Field, & Seiverling, 2010). Commonly implemented positive reinforcers include social praise, social interaction, access to preferred objects, and access to preferred food (Linscheid, 2006). It is important to choose positive reinforcers that have been proven to be effective to ensure that the reinforcement is not maintaining undesirable behaviors. When the child demonstrates a desired behavior, positive reinforcers should be immediately provided. Instant gratification through positive reinforcement will teach the child to associate eating with pleasant feelings, rather than the previously associated distress and anxiety.

Blissett and Harris (2002) reviewed treatments to determine the most effective intervention because they believed that positive reinforcement would be the most effective treatment. Blissett and Harris conducted their own study on a two- year-old male with growth problems and moderately severe feeding difficulties such as poor appetite, food refusal, and intermittent vomiting. During their trial, meals were designed to be a positive experience and took place for a duration of thirty minutes, with the child being encouraged to eat preferably once every two hours. Positive reinforcement in the form of praise and social attention was given when the child consumed food. After six months of treatment, the child's vomiting had completely ceased and self feeding had improved. Parents also reported that mealtime interactions had becoming an increasingly pleasant experience (Blissett & Harris, 2002). Blisset and Harris concluded that, when treating pediatric behavioral feeding disorders, parents should be advised to return control of feeding to the child and offer positive reinforcement immediately after desired feeding behaviors are exhibited (Blissett & Harris, 2002). Blisset and Harris' study shows that positive reinforcement encouraged the child to display desirable behavior during feeding and also facilitated a positive interaction between the child and parents.

"Intervention studies have hypothesized that many children with food refusal have learned that inappropriate behaviors such as tantrums, leaving the table, or throwing food result in their caregiver terminating the meal and thus allowing them to avoid eating" (Williams et al., 2010, p.628). The most commonly used techniques to correct this behavior are physical guidance and nonremoval of the eating utensil. "Physical guidance has been described as a therapist physically guiding the mouth open by applying gentle pressure to the mandibular junction of the jaw contingent upon the child refusing to accept a bite within a specified period of time" (Williams et. al., 2010, p.628). Nonremoval of the eating utensil consisted of presenting food or drink until the target behavior is performed, while ignoring or blocking challenging behaviors (Williams et al., 2010). Both of these techniques have been shown to increase food acceptance (Williams et al., 2010). Prevention of challenging behaviors such as tantruming and throwing food have been proven to be effective alone, but it was reported that when combined with reinforcement, it resulted in a decreased rate of challenging behaviors (Williams et al., 2010).

Stimulus fading is another treatment option for behavioral feeding disorders that has been reported to be effective (Freeman & Piazza, 1998). Stimulus fading is a technique in which the stimulus gradually changes while the results remain the same (Freeman & Piazza, 1998). In regards to feeding, stimulus fading can be implemented in a variety of ways. When treating food refusal, one study described a multiple component treatment package, which included stimulus fading, reinforcement, and extinction to treat a behavioral feeding disorder (Freeman & Piazza, 1998). This study involved a six year old female with a behavioral feeding disorder and

destructive behavior such as hitting, biting, and throwing objects. This study reported a gain in consumption of food when the amount of presented food was increased by 5% when the child was 80% compliant over three consecutive sessions (Freeman & Piazza, 1998). Using this treatment package, the child went from total food refusal during baseline sessions to consuming 50% age appropriate proportions from all four food groups within 12 weeks (Freeman & Piazza, 1998).

Williams et al., (2010), reviewed several studies on the use of stimulus fading during therapy. One study reported success when teaching a child with texture selectivity to eat higher textures by systematically increasing the texture of her food, while a different study achieved success by decreasing the amount of food offered on the spoon initially and systematically increasing the amount of acceptance were achieved (Williams et al., 2010).

Another form of stimulus fading includes blending novel and preferred foods until the novel foods are accepted in isolation. In one particular study, blending was used to treat a six year old female with a behavioral feeding disorder and self destructive behavior such as head banging and biting. During this study, foods were blended at ratios of 10% novel to 90% preferred and 20% novel and 80% preferred (Freeman & Piazza, 1998). After 12 weeks, the child was consistently consuming 50% age-appropriate portions of all four food groups (Freeman & Piazza, 1998). The results of this study indicate that consumption of the blended foods increased the likelihood that novel foods would later be consumed without being blended together (Freeman & Piazza, 1998). There are many ways to implement stimulus fading, which means that SLPs should draw on their previous experience with children as well as empirical evidence to determine what will be most effective for their client.

Forwards and backwards chaining can be used to teach the child a skill through using small, sequenced steps ("Chaining and shaping behavior- mastering and motivating the child to learn the steps", 2010). As the child completes one step, it serves as a prompt to start the next step. For example, if a child does not self feed, five steps of a chain might be to pick up the spoon, place the spoon in the bowl, scoop the food into the spoon, lift the spoon from the bowl, and put the food into the mouth. Each step can be taught through shaping, which is when a child is rewarded for an approximation of performing the desired task ("Chaining and shaping behavior- mastering and motivating the child to learn the steps", 2010). When the child performs the task, or an approximation, it is reinforced. The requirements for reinforcement will increase as greater accuracy and independence are expected.

As mentioned earlier, either forwards or backwards chaining can be implemented. In forwards chaining, the clinician would begin teaching the first task (i.e. picking up the spoon). In backwards chaining the clinician would begin teaching the last task (i.e. putting the food in the mouth). Deciding which method to use depends on the individual child. It is best to use forward chaining when the child understands the final end product, the child is motivated to learn the new skill, or if the child displays little resistance to instruction and can tolerate be prompted through several steps ("Chaining and shaping behavior- mastering and motivating the child to learn the steps", 2010). It is best to use backwards chaining when the child does not understand the final end product, has low motivation to learn the new skill and therefore needs to receive an effective reinforcer for completing the task, or when the child shows resistance to instruction and prompting ("Chaining and shaping behavior- mastering and motivating the child to learn the steps", 2010).

Calorie restriction has been reported to be an effective technique in behavioral feeding disorders. This technique is based on the philosophy that the child's motivation to eat will increase as calorie deprivation is increased.

Linscheid's (2006) study stated the following:

Differential reinforcement of intake and compliance are important components of feeding treatments. However, in the long run, what will maintain feeding behaviors are the natural consequences of eating: satiation of hunger and the taste of the food. Whereas natural consequences and specific behavioral procedures are important in treatment, I believe that inducing hunger in the child is almost always as or more important for success than the specific behavioral contingencies utilized. (p. 13)

The implementation of calorie restriction, or appetite manipulation, also increases the effectiveness of other interventions chosen to treat behavioral feeding disorders. Appetite manipulation, for children who are feeding by mouth, generally consists of withholding calories from the child, except during mealtimes. A study conducted by Williams et al (2010) showed that ten children dependent on feeding tubes were treated with an intervention of positive reinforcement combined with appetite manipulation, and at a six month follow up, eight of ten children remained off of feeding tubes.

According to Linscheid (2006), the degree to which hunger can be induced predicts the speed and degree of success of treatment. In one study, it was reported that as children with feeding tubes increased their oral caloric intake, calories supplied by a feeding tube were decreased. This study reported that the average length of stay in the inpatient program was 61 days, and 86% of the children took all nutrition orally at the time of discharge (Linscheid, 2006). Another study reported a more aggressive form of calorie restriction where caloric feedings

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through tubes were discontinued for the first day or two of inpatient admittance. Hydration was achieved through supplying water or Pedialyte. As treatment progressed, it was determined on a day- to- day basis if calories needed to be delivered through the feeding tubes to ensure the child did not lose too much weight. This report had a higher success rate than the previously mentioned study. 87.9% of children took all nutrition orally at the time of discharge and inpatient stays were considerably shorter than in the previously mentioned study with an average length of 8.77 days (Linscheid, 2006).

This requires careful implementation to ensure that the child's health is not compromised by issues such dehydration. Hydration can be easily achieved by continually offering water or other zero-calorie fluids. For children who are receiving nutrition from feeding tubes, appetite manipulation can be achieved by terminating caloric feedings through the tubes for the first few days of admission, while providing water or Pedialyte. The decision to provide calories through the tubes can be made on a day to day based to ensure that a potentially harmful amount of weight is not lost. If it is determined that artificial feedings need to be provided, 25-50% are provided through the tubes while the child is sleeping so that the child does not associate the tube feedings with the cessation of hunger (Linscheid, 2006). Children undergoing appetite manipulation should be carefully monitored, therefore children who are being treated on an outpatient basis should have scheduled daily weight checks and hydration status assessments.

Perhaps the most important treatment technique is caregiver training.

Williams et al. (2010 reported that numerous studies described children with food refusal attempting to avoid, or at least delay, eating through the use of a variety of behaviors such as crying, tantrums, excessive talking, throwing food, and even negotiation. Caregiver responses to such behaviors included coaxing, pleading, or yelling, to induce

their children to eat. These caregiver tactics were described as being unsuccessful at decreasing these inappropriate behaviors because these caregivers' actions, unintentionally, provided attention for the children's refusal behaviors. (p.627)

Once a child has completed a successful program to remediate behavioral feeding disorders, it is vital that caregivers receive proper training so that generalization and maintenance of the gains made during treatment can be continued at home. Continued success rates are reported to be largely based on the caregivers' willingness to follow through with the treatment plan provided by professionals. One study reported that after treatment, caregivers discontinued the treatment protocol, causing their child to return to baseline levels (Shore & Piazza, 1997). Parent training can consist of several components such as the distribution of educational information, role playing, video tape reviews, and verbal feedback.

Several studies have outlined inpatient programs where the parent is initially absent from the therapy room. There are several rationales for this, one being that the caregiver's presence alone can trigger undesirable behavior. Also, children often become upset while new feeding demands are being placed on them and caregivers tend to struggle with staying composed while the child is tantruming or seemingly in emotional distress (Linscheid, 2006).

Once the child has made gains the therapist introduces the caregiver into the session to observe mealtime procedures and rationales. During this phase, it is helpful for the caregiver to model the therapist's use of praise for desirable behavior or withdrawal of attention for undesirable behavior (Linscheid, 2006). Initially, the presence of a caregiver often results in a setback in progress because children will naturally regress back to old behaviors in their presence. However, progress tends to increase again as the child experiences that expectations have not changed even though the caregiver is present. Once the caregiver is confident in their understanding of procedures, they should begin to feed the child with the therapist observing (Linscheid, 2006). If the child becomes noncompliant the therapist can take over the feeding until the child is exhibiting desirable behavior, at which point the caregiver resume the feeding.

Once the child and caregiver have experienced success with this phase, the final phase of caregiver training is for the parent to feed the child with the therapist observing from a distance, preferably from an observation room (Linscheid, 2006). This is a great opportunity for the parent to conduct therapy with the child independently, yet have the opportunity to confer with the therapist in case a question or problem would arise.

Outpatient caregiver training requires the therapist to observe parent and child mealtime interaction. This can be achieved by conducting a few meals in the clinic setting, direct in home observation, or by observing recorded mealtime interactions that the caregiver can bring into the clinic (Linscheid, 2006). During these observations the therapist can provide feedback on changes that can be made to the mealtime interaction. The same routine can be followed once a treatment has been put into place to ensure the caregiver is providing optimal implementation of the chosen treatment.

As mentioned before, no two children with feeding disorders are exactly alike, and a child's feeding behaviors might change throughout the course of therapy. This can make choosing an effective treatment plan a complex task. It is importance for SLPs to monitor their client's progress during therapy, as well as changes in behavior, in order to understand the functions of the client's behaviors. Once this is understood, it will be easier to determine several treatment options, rather than relying on one particular technique.

In conclusion, there are many types of behavioral feeding disorders that occur in infants and children that have a high prevalence and can range from mild to moderate severity levels. There are many different assessment tools, both formal and informal, that have been developed to assess feeding disorders. Clinicians should use their best clinical judgment to determine what assessments will work best for their client due to the fact that every assessment tool has its pros and cons. There are also many treatments that have been found to be effective when treating behavioral feeding disorders. Clinicians should be aware of what techniques have been previously implemented by caregivers or other SLPs and the results of these techniques. This information, along with researching methods that have been proven successful by evidence based practice, will help the SLP in determining what therapy techniques will currently be most effective for their client.

Future Studies

After reviewing the literature on behavioral feeding disorders, two research questions were formed for further exploration of the topic. First, what are the most effective caregiver training methods to ensure long-term maintenance of the achievements made during therapy? This question was formed due to reports stating that "parent training is an important determinant for generalization and maintenance of treatment gains achieved during behavioral interventions" (Shore & Piazza, 1997, p. 6). Although parent training is an important aspect of maintained success, empirical research that indicates the success rates of various training methods is lacking. Many general outlines of parental training are reported, but details of the specificities of their implantation are difficult to find.

The second question was posed due to the fact that 70% of children with autism have been described as selective eaters. (Volkert & Petula, 2010). Volkert & Petula (2010) reported that "some authors have suggested that the presence of feeding difficulties in infancy may be an early sign of autism" (p. 155). What would be the effects of prevention and early intervention in children with autism that have behavioral feeding disorders? Would informing parents about methods of preventing behavioral feeding issues lead to a decline in the prevalence of behavioral feeding disorders in autism? Further research in this area could be extremely beneficial to SLPs, parents, and individuals with autism alike.

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