

CHILDREN AND FAMILY RESEARCH CENTER

Non-organic Failure to Thrive Literature Review

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Executive Summary

Failure to thrive (FTT) is a descriptive condition of a child who falls to the bottom 3 to 5% or lower on established growth charts (Wooster, 1999). Generally, failure to thrive is classified into three categories: non-organic or environmental, organic (attributable to organic disease), or mixed (interaction of organic and non-organic influences) (Drotar, 1991).

In order to rule out organic failure to thrive, a medical evaluation and a social history should be completed (de Jong, 1997). An observational period of the child in the hospital will show whether adequate caloric intake results in satisfactory weight gain. If so, the cause of failure to thrive is likely to be non-organic (Leung, Robson, & Fagan, 1993). However, the absence of organic disease does not indicate that a child with FTT is being abused or neglected (Wright and Talbot, 1996).

The empirical research on failure to thrive, and more specifically on non-organic failure to thrive (NOFTT), can be categorized into at least three areas: child factors, parental factors, and interventions.

What Child Factors are Related to Failure to Thrive?

- There are long-term physical effects of NOFTT, including limited physical stature, smaller size, less weight gain, less cognitive ability, learning difficulties, and developmental delays (Boddy, Skuse, & Andrews, 2000; Dykman, Casey, Ackerman, & McPherson, 2001; Reif, Beler, Villa, & Spirer, 1995).
- NOFTT children often have more difficult behaviors (Drotar & Sturm, 1992; Steward, 2001).

- Feeding history and behavior may contribute to FTT (Mathisen, Skuse, Wolke, & Reilly, 1989; Ramsay, Gisel, & Boutry, 1993; Wright & Birks, 1999; Wright, Loughridge, & Moore, 2000).
- There is a cumulative risk of FTT and child maltreatment (Kerr, Black, & Krishnakumar, 2000; Mackner, Starr, & Black, 1997)

What Parental Factors are Related to Failure to Thrive?

- Maternal IQ has been correlated with child cognitive abilities of children earlier diagnosed with NOFTT (Boddy et al., 2000; Dykman et al., 2001).
- Poor parenting skills have been identified with parents of children diagnosed with NOFTT (Barton, 2001; Black, Hutcheson, Dubowitz, & Berenson-Howard, 1994; Steward, 2001).
- Families of NOFTT children have been shown to have less adaptive relationships (Drotar, Pallotta, & Eckerle, 1994).
- NOFTT has also been revealed as contributing to subsequent poor parenting (Ayoub & Milner, 1985; Hutcheson, Black, and Starr, 1993; Skuse, Gill, Reilly, Wolke, & Lynch, 1995).
- Mothers of children with failure to thrive often have difficult backgrounds and current circumstances (Bithoney & Newberger, 1987; Gorman, Leifer, & Grossman, 1993; Lobo, Barnard, & Coombs, 1992; Raynor & Rudolph, 1996; Weston et al., 1993).
- A study has shown that parents of NOFTT children frequently had a major mental disorder (Duniz et al., 1996).

What Interventions have been Shown to be Successful for Children Diagnosed with Failure to Thrive?

- Clinicians who provide services in the perinatal period correctly identify infants who are at high risk of maltreatment and other major adverse outcomes resulting from poor parenting (Levanthal, Garber, & Brady, 1989).
- Children with FTT who were followed by a multidisciplinary team experience better outcomes than those who receive only standard medical care (Bithoney et al., 1991; Hutcheson et al., 1997; Wright, Callum, Birks, & Jarvis, 1998).
- Home visits also result in positive outcomes (Hutcheson et al., 1991; Wright et al., 1998).

Introduction

“Failure to thrive is a descriptive condition that indicates a child is delayed in growth compared to age-related standard anthropometric measures of height, weight, and/or height for weight when compared to healthy children” (Wooster, 1999, p.353). Children diagnosed with failure to thrive are healthy at birth but later fall below standard measurements for growth (Hathaway). These children fall to the bottom 3-5% or lower on growth charts (Wooster).

This condition has been broken down into three types: organic failure to thrive (an infant with a medical condition or physical impairment), non-organic failure to thrive (NOFTT), and mixed failure to thrive (de Jong, 1997; Drotar, 1991). This report will focus on the latter two types, or only failure to thrive that is not exclusively a medical condition or physical impairment.

However, according to Wright (2000), three separate population-based studies have found that only 5% or less of children had major organic disease, and one cannot clearly distinguish organic from non-organic FTT because the underlying cause still tends to be inadequate nutrition.

In order to rule out organic failure to thrive, a medical evaluation is required which includes a complete medical history, medical conditions, individual growth history, and family growth patterns. A social history should complement the medical history and include such information as the family’s resources, education, parent/child bonding, infant behavioral characteristics, parental functioning, and family system functioning (de Jong, 1997). An observational period of 10-14 days in the hospital almost always allows for an adequate assessment. If adequate caloric intake results in satisfactory weight gain, the cause of failure to thrive is likely to be non-organic (Leung, Robson, & Fagan, 1993).

It should be noted that the absence of organic disease does not indicate that a child with FTT is being abused or neglected since FTT can be associated with a wide continuum of parental

behaviors ranging from normal to abusive or neglecting. The failure to thrive must be placed in context (Wright & Talbot, 1996).

Search Strategy

Using the DCFS Best Practices research protocol, the following sources were used to locate relevant literature about non-organic failure to thrive: Eric, Social Science Abstracts, Social Work Abstracts, PsychINFO, MEDLINE, and EBM – Cochrane Library. The National Clearinghouse on Child Abuse and Neglect Information, American Academy of Pediatrics, American Medical Association, American Psychological Association, and U.S. Department of Justice – National Criminal Justice Reference Service were also reviewed for pertinent information. To be included in this review, a study must have: (a) been published in a psychological, medical, sociological, and/or social work journal, (b) been an empirical study of non-organic failure to thrive, or (c) been a review of professional and accrediting organization standards.

Results

Empirical research on non-organic failure to thrive (NOFTT) can be divided into at least three areas: child factors, parental factors, and interventions.

Child Factors

The long-term physical effects of NOFTT were noted in several studies. Boddy, Skuse, and Andrews (2000), in looking at 42 6-year olds with earlier FTT originally studied at 15 months compared to 42 matched controls, found that NOFTT is associated with persistent limitations in physical stature. In their study of 27 8-12 year olds who had been diagnosed with NOFTT as infants, Dykman, Casey, Ackerman, and McPherson (2001) found that these children were, on average, smaller, less cognitively able, and more behaviorally disturbed than a matched

control group. Similarly, Reif, Beler, Villa, and Spierer (1995) found that 61 NOFTT children reviewed about 5 years after initial presentation and compared to a matched control group were shorter, gained less weight, had more learning difficulties, and evidenced developmental delays. Also, children who caught up faster in growth had better school performance and came from families with higher socioeconomic status.

Other studies focused more on the behaviors of NOFTT children. Steward (2001) in her study of 31 infants, 17 with NOFTT and 16 matched healthy controls, found NOFTT infants had more difficult behaviors. This was also found to be the case in a study by Drotar and Sturm (1992) of 48 preschool NOFTT children compared with 47 healthy children. They found that parents of these children identified higher levels of child behavioral symptoms. The NOFTT children demonstrated deficits in behavioral organization, ego control, and ego resiliency.

Wright and Birks (1999) and Wright, Loughridge, & Moore (2000) found that demanding behavior, low appetite, and poor feeding skills may contribute to FTT. They studied 97 children with FTT, compared to 28 children without this condition, who were given a standardized assessment at median age 15.1 months. Parents were questioned about the child's feeding history and behavior. The FTT children had more infancy feeding problems and were introduced to solids and finger foods later than controls.

Similarly, Ramsay, Gisel, and Boutry (1993), in their study of 30 NOFTT and 22 organic FTT infants who were 1- to 42-months old seen during a 43-month period, found that early feeding history revealed abnormal duration of feeding time, poor appetite, delayed tolerance of food textures, and deviant feeding behavior. They suggested a common factor underlying feeding-related symptoms might be neurophysiological.

Feeding issues were also revealed in a study by Mathisen, Skuse, Wolke, and Reilly (1989). Health visitors from child clinics identified and observed ten infants with FTT in their homes. Factors related to FTT included location and duration of mealtimes, positioning of the infant, infant minimal neurological dysfunction, such as hypersensitivity to touch in and around the mouth and oral-motor dysfunction, and the infant's lack of competence in communicating needs during mealtimes. They concluded that when caretaker doesn't recognize and adapt to the child's needs, growth problem might be exacerbated by chronic undernutrition because of food-impaired ingestion. Bithoney and Newberger (1987) also noted poor child health, high reactivity to visual and auditory stimuli, and disordered feeding interaction of 41 children who were hospitalized with NOFTT as compared to matched controls.

The cumulative risk of failure to thrive and child maltreatment was the focus of several studies of children with failure to thrive. Kerr, Black, and Krishnakumar (2000) conducted a longitudinal study of 193 inner city, primarily African American 6-year olds. They categorized these children into four risk groups: children with neither FTT nor maltreatment, children with only FTT, children with maltreatment but not FTT, and children with both FTT and maltreatment. Children with both risk factors had more behavior problems and worse cognitive performance and school functioning than did children in the other three groups. Children with either FTT or maltreatment achieved intermediate scores.

Mackner, Starr, and Black (1997) looked at 177 children 3 to 30 months of age and from low income, primarily African American families. These children were also divided into four groups: those with neglect and FTT, those children who experienced neglect only, those diagnosed only with FTT, and those children with neither neglect nor FTT. Results indicated that the cognitive performance of children who experienced both neglect and FTT were significantly

below the other three groups. Results of cognitive performance for children with neither neglect nor FTT were not significantly higher over either FTT or neglect.

Parental Factors

Parents, and especially mothers, were the focus of several studies on non-organic failure to thrive. Recent studies have correlated maternal IQ to child cognitive abilities of children earlier diagnosed with NOFTT. Maternal IQ has been found to be the strongest predictor of reading scores for NOFTT children (Dykman et al., 2001) and the sole significant predictor on all indices of child cognitive abilities (Boddy et al., 2000).

Several studies revealed poor parenting skills of parents of children diagnosed with NOFTT. Black, Hutcheson, Dubowitz, and Berenson-Howard (1994) found NOFTT parents to be less nurturant and more neglecting. They studied 102 low income, inner city, mostly African American children with NOFTT and 67 matched controls. Steward (2001) found mothers of NOFTT children less likely to remain involved in play with their children and suggested strategies could be developed to help mothers in interacting with their children.

Families of NOFTT children have also been shown to have less adaptive relationships. Drotar, Pallotta, and Eckerle (1994) studied 31 families of NOFTT children aged 1- to 9-months. At both the point of diagnosis and in a follow-up about 3 years later, family relationships were less adaptive than those of a control group. However, the quality of family relationships at the time of NOFTT diagnosis was found not to be predictive.

In a study of 52 mothers in rural Kentucky, where there is known to be a high incidence of children with failure to thrive, Barton (2001) interviewed mothers twice during an infant's first 6-months. She found a high incidence of formula feeding over breast-feeding that increased over time. While mothers initially sought information from their medical caregivers, they

increasingly relied on advice from grandmothers, who encouraged introducing solid foods prematurely, leading to undernutrition.

While poor parenting is correlated with failure to thrive, NOFTT has also been revealed as contributing to subsequent poor parenting (Skuse, Gill, Reilly, Wolke, & Lynch, 1995). Ayoub and Milner (1985), in evaluating 42 parents of hospitalized children with NOFTT, found that as severity of FTT increased, the level of parent awareness/cooperation decreased. Parental awareness/cooperation was highly related to positive outcome for the failure to thrive child.

Hutcheson, Black, and Starr (1993) observed interactional characteristics of 68 pairs of low-income, mother-child dyads during feeding sessions. The children ranged in age from 8 to 26 months old. Half the pairs had children with NOFTT and half did not. Mothers of NOFTT toddlers were more hostile and intrusive and less flexible than mothers of NOFTT infants, and exhibited more tension and anger in their interactions.

Studies have also shown that mothers of children with failure to thrive often have difficult backgrounds and current circumstances. Weston, Colloton, Halsey, Covington, Gilbert, Sorrentino-Kelly, and Renoud (1993) found that 80% of the 59 mothers of NOFTT children in their study reported that they had a history of being abused. Lobo, Barnard, and Coombs (1992) found that mothers of NOFTT children reported more change in their lives and less social support than mothers of healthy children in their study. Raynor and Rudolph (1996), in studying 63 FTT children aged 6 months to 2 ½ years, identified a high level of nutritional and developmental problems of children against a backdrop of poverty and maternal isolation. Among their findings, Bithoney and Newberger (1987) found social isolation, few maternal opportunities to escape caregiving, and fewer available extended family members to be present in families with children hospitalized with NOFTT.

Similarly, Gorman, Leifer, and Grossman (1993), in their research of 20 NOFTT infant-mother dyads and matched group of 23 dyads, found that a significantly higher proportion of mothers of NOFTT babies reported having grown up with an absent, ill, or abusive maternal caregiver, and 12 of the 20 reported their fathers were absent, ill, or abusive. These mothers reported significantly less two-parent stability in childhood, more crises during childhood, significantly fewer daily contacts with social network members, a lower percentage of long-term social network members, less support from their social network, fewer persons who helped with the baby, fewer persons they socialized with, less satisfaction with the support they received, more depressive symptoms, and more negative current life events. They also perceived their babies to have a more difficult temperament.

Duniz, Scheer, Trojovsky, Kaschnitz, Kvas, and Macari (1996) also reported mental health problems of parents of NOFTT children. They studied 76 parents (48 mothers and 28 fathers) and their 50 firstborn infants aged 6 to 18 months hospitalized over a 14-month period. Of these parents, 93% of mothers and 38% of fathers showed axis I pathology, or a major mental disorder.

Interventions

Beyond the standard assessment needed in diagnosing and treating failure to thrive as discussed briefly in the introduction, research has shown some successful interventions. In their study of medical clinicians, Levanthal, Garber, and Brady (1989) found that clinicians who provide services in the perinatal period correctly identify infants who are at high risk of maltreatment and other major adverse outcomes resulting from poor parenting. Approximately $\frac{1}{4}$ of the high-risk sample had been maltreated by their 4th birthday. When a broader adverse

outcome was considered, 54% had been maltreated, had evidence of poor weight gain with a nonorganic cause, or had a major separation from their primary caregiver.

The type of treatment approach has also been found to impact the health of NOFTT children. Bithoney, McJunkin, Michalek, Snyder, Egan, and Epstein (1991) conducted research on 53 children diagnosed with NOFTT referred to an outpatient multidisciplinary team clinic compared with 107 NOFTT children served in a primary care clinic over a 6-month period. The multidisciplinary team was comprised of pediatricians, nutritionists, a pediatric nurse practitioner, a child development specialist, a pediatric gastroenterologist, and a social worker. The children followed in the multidisciplinary team clinic were found to have grown better than did those in primary care clinic.

In a somewhat similar approach to treating failure to thrive, 95 children were treated in a health visitor led intervention and compared with 92 control children all diagnosed with FTT during their first two years of life. A dietician, pediatrician, and social worker assisted the health visitor. At follow-up (beyond age 3), children in the intervention group were significantly taller and heavier and had better appetites than children in the control group. Ninety-one children (76%) in the intervention group had recovered from FTT compared with 60 (55%) in the control group. (Wright, Callum, Birks, & Jarvis, 1998)

In the study by Hutcheson, Black, Talley, Dubowitz, Howard, Starr, and Thompson (1997) all failure to thrive children received services in a multidisciplinary growth and nutritional clinic and half also received home visits from a lay home visitor for one year. While there were no effects on the child at the close of home intervention, at age 4, there were effects on motor development on all of these children. There were also positive effects on

cognitive development and behavior during play on children of mothers who reported low levels of negative affectivity.

Conclusions

Non-organic failure to thrive is a multi-faceted condition effecting the lives and futures of infants and young children. Once diagnosed, the factors involved in each particular case of NOFTT needs to be identified to determine appropriate treatment. This may involve determining child factors and/or parental factors involved. In either case, the parents will need to be made aware of factors involved and assistance in improving the health of the child. The recommended interventions include the involvement of both medical professionals and social workers. In home interventions have also proved successful and are often necessary.

References

- Ayoub, C. C., & Milner, J.S. (1985). Failure to thrive: Parental indicators, types, and outcomes. *Child Abuse and Neglect, 9(4)*, 491-499.
- Barton, S.J. (2001). Infant feeding practices of low-income rural mothers. *MCN American Journal of Maternal Child Nursing, 26(2)*, 93-97.
- Bithoney, W.G., McJunkin, J., Michalek, J., Snyder, J., Egan, H., & Epstein, D. (1991). The effect of a multidisciplinary team approach on weight gain in non-organic failure-to-thrive children. *Journal of Developmental & Behavioral Pediatrics, 12(4)*, 254-258.
- Bithoney, W.G. & Newberger, E.H. (1987). Child and family attributes of failure-to-thrive: Growth failure secondary to feeding-skills disorder. *Journal of Development and Behavioral Pediatrics, 8(1)*:32-6.
- Black, M.M., Hutcheson, J.J., Dubowitz, H., & Berenson-Howard, J. (1994). Parenting style and developmental status among children with non-organic failure to thrive. *Journal of Pediatric Psychology, 19(6)*, 689-707.
- Boddy, J., Skuse, D., & Andrews, B. (2000). The developmental sequelae of non-organic failure to thrive. *Journal of Child Psychology & Psychiatry & Allied Disciplines, 41(8)*, 1003-1014.
- de Jong, A.R. (1997). Do we neglect child neglect? *Delaware Medical Journal, 69(8)*, 397-404.
- Drotar, D. (1991). The family context of non-organic failure to thrive. *American Journal of Orthopsychiatry, 61(1)*, 23-34.
- Drotar, D., Pallotta, J., & Eckerle, D. (1994). A prospective study of family environments of children hospitalized for non-organic failure-to-thrive. *Journal of Developmental & Behavioral Pediatrics, 15(2)*, 78-85.
- Drotar, D., & Sturm, L. (1992). Personality development, problem solving, and behavior problems among preschool children with early histories of non-organic failure-to-thrive: A controlled study. *Journal of Developmental & Behavioral Pediatrics, 13(4)*, 266-273.
- Duniz, M., Scheer, P.J., Trojovsky, A., Kaschnitz, W., Kvas, E., and Macari, S. (1996). Changes in psychopathology of parents of NOFT (non-organic failure to thrive) infants during treatment. *European Child & Adolescent Psychiatry, 5(2)*, 93-100.
- Dykman, R.A., Casey, P.H., Ackerman, P.T., & McPherson, W.B. (2001). Behavioral and cognitive status in school-aged children with a history of failure to thrive during early childhood. *Clinical Pediatrics (Phila), 40(2)*, 63-70.

- Gorman, J., Leifer, M., & Grossman, G. (1993). Non-organic failure to thrive: Maternal history and current maternal functioning. *Journal of Clinical Child Psychology*, 22(3), 327-336.
- Hutcheson, J.J., Black, M.M., & Starr, R.H. Jr. (1993). Developmental differences in interactional characteristics of mothers and their children with failure to thrive. *Journal of Pediatric Psychology*, 18(4), 453-66.
- Hutcheson, J. J. Black, M.M., Talley, M., Dubowitz, H., Julie B., Starr, R.H. Jr. & Thompson, B. S. (1997). Risk status and home intervention among children with failure-to-thrive: Follow-up at age 4. *Journal of Pediatric Psychology*. 22(5), 651-668.
- Kerr, M.A., Black, M.M., & Krishnakumar, A. (2000). Failure-to-thrive, maltreatment and the behavior and development of 6-year-old children from low-income, urban families: a cumulative risk model. *Child Abuse & Neglect*, 24(5), 587-598.
- Leung, A.K., Robson, W.M., & Fagan, J.E. (1993). Assessment of the child with failure to thrive. *American Family Physician*, 48(8), 1432-1438.
- Leventhal, J.M., Garber, R.B., Brady, C.A. (1989). Identification during the postpartum period of infants who are at high risk of child maltreatment. *Journal of Pediatrics*. 114(3), 481-487.
- Lobo, M.L., Barnard, K.E., & Coombs, J.B. (1992). Failure to thrive: A parent-infant interaction perspective. *Journal of Pediatric Nursing*, 7(4), 251-261.
- Mackner, L.M., Starr, R. Jr., & Black, M.M. (1997). The cumulative effect of neglect and failure to thrive on cognitive functioning. *Child Abuse & Neglect*, 21(7), 691-700.
- Mathisen, B., Skuse, D., Wolke, D., & Reilly, S. (1989). Oral-motor dysfunction and failure to thrive among inner-city infants. *Developmental Medicine & Child Neurology*, 31(3), 293-302.
- Ramsay, M., Gisel, E.G., & Boutry, M. (1993). Non-organic failure to thrive: growth failure secondary to feeding-skills disorder. *Developmental Medicine & Child Neurology*, 35(4), 285-297.
- Raynor, P., & Rudolf, M. C. J. (1996). What do we know about children who fail to thrive? *Child Care, Health & Development*. 22(4), 241-250.
- Reif, S., Beler, B., Villa, Y., & Spirer, Z. (1995). Long-term follow-up and outcome of infants with non-organic failure to thrive. *Israel Journal of Medical Science*, 31(8), 483-489.
- Skuse, D.H., Gill, D., Reilly, S., Wolke, D., & Lynch, M.A. (1995). Failure to thrive and the risk of child abuse: A prospective population survey. *Journal of Medical Screen*, 2(3), 145-149.

- Steward, D.K. (2001). Behavioral characteristics of infants with non-organic failure to thrive during a play interaction. *MCN American Journal of Maternal Child Nursing*, 26(2), 79-85.
- Weston, J.A., Colloton, M., Halsey, S., & Covington, S. et al. (1993). A legacy of violence in non-organic failure to thrive. *Child Abuse & Neglect*, 17(6), 709-714.
- Wooster, D.M. (1999). Assessment of non-organic failure to thrive. *Infant-Toddler Intervention*, 9(4), 353-371.
- Wright C.M., and Birks, E. (2000). Risk factors for failure to thrive: a population-based survey. *Child Care & Health Development*, 26(1), 5-16.
- Wright, C.M., Callum, J., Birks, E., & Jarvis, S. (1998). Effect of community based management in failure to thrive: Randomized controlled trial. *British Medical Journal*, 317(7158), 571-574.
- Wright C.M., Loughridge J, & Moore, G. (2000). Failure to thrive in a population context: Two contrasting studies of feeding and nutritional status. *The Proceedings of the Nutrition Society*, 59(1), 37-45.
- Wright, C.M., & Talbot, E. (1996). Screening for failure to thrive--what are we looking for? *Child Care & Health Development*, 22(4), 223-234.