The perceptions of Speech-Language Therapists regarding nutritional issues in early intervention

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"Trust in the Lord with all your heart and lean not on your own understanding; in all your ways acknowledge him and he will make your paths straight"

Proverbs 3: 5-6

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ABSTRACT:

TITLE: The Perceptions of Speech-Language Therapists regarding Nutritional Issues in Early Intervention.

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The traditional role of speech-language therapists as feeding specialists appears to have focused primarily on the mechanics of feeding disorders, without fully considering the impact of nutritional needs on a child's development and communication. The aim of the study was to investigate the experiences and perceptions of a group of speech-language therapists regarding nutritional issues in children requiring feeding therapy or early communication intervention. A qualitative research design was employed in the form of a descriptive survey and a questionnaire was compiled as the data collection instrument. Forty-nine questionnaires were delivered to speech-language therapists within the Johannesburg and Pretoria geographical areas, of which 32 were suitable for analysis. Closed ended questions were analyzed quantitatively using descriptive statistics while responses to open-ended questions were categorized thematically. Results indicated that all respondents came into contact with clients who had, or who were at risk for, feeding disorders and nutritional deficiencies. However, findings revealed that during assessment and treatment of these clients, respondents tended to neglect issues related to nutrition, as well as psychosocial issues pertinent to feeding disorders. Furthermore, respondents appeared not to have fully realized the importance of their role as communication specialists within the feeding context. It was found that the

majority of respondents were involved within a multidisciplinary team approach; however, the application of the more effective transdisciplinary approach was limited. This was confirmed by results revealing that collaboration with other professionals, such as dieticians, did not consistently occur. In terms of training, it was evident that respondents received the majority of their training in feeding therapy from continued education, which included aspects of nutrition. However, undergraduate training was perceived as having limitations within the theoretical content as well as practical application, and did not incorporate nutritional aspects. In light of the apparent need for a more holistic view of paediatric clients with feeding disorders, suggestions were made regarding the inclusion of vital nutritional issues and psychosocial factors within training and transdisciplinary service delivery in South Africa. Furthermore, relevant research topics within the field of paediatric feeding were presented. Broadening perspectives by means of holistic research and training may enhance service delivery to children with paediatric feeding disorders.

KEY WORDS: Early Communication Intervention; Early Intervention; Speech-Language Therapist; Feeding Specialist; Paediatric Dysphagia; Feeding Disorder; Nutritional Deficiency; Oral-Motor Delay; Failure to Thrive; Malnutrition; Feeding Therapy; Transdisciplinary Team Approach

OPSOMMING:

TITEL: Spraak-Taalterapeute se Persepsies van Nutrisie-Kwessies in Vroeë Intervensie

NAAM: Felicity Jane Evens

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Die tradisionele rol van die spraak-taal terapeut as voedings spesialis het primêr gefokus op die fisiese proses van voedingsafwykings sonder om die volle impak van nutrisionele behoeftes by 'n kind se ontwikkeling en kommunikasie in aanmerking te neem. Die doel van hierdie studie was om die ervarings en persepsies van 'n groep spraak-taalterapeute te ondersoek aangaande nutrisie-kwessies by kinders wat voedings terapie of kommunikasie intervensie nodig het. 'n Kwalitatiewe navorsingsontwerp wat gebruik maak van 'n beskrywende opname met vraelys as data insamelings instrument is geselekteer. Nege-en-veertig vraelyste is uitgestuur na spraak-taalterepeute in die Johannesburg en Pretoria omgewing. Twee-en-dertig is terugontvang, en was bruikbaar vir analise. Geslote vrae is kwantitatief geanaliseer deur middel van beskrywende statistiese prosedures terwyl response op oop vrae tematies gekatogoriseer is. Resultate het getoon dat alle respondente reeds in kontak was met kliënte wat voedings en nutrisionele probleme ondervind of 'n risiko daarvoor toon. Bevindings het ook getoon dat gedurende die assessering en behandeling van hierdie kliënte, respondente geneig was om nutrisie sowel as psigososiale aspekte wat belangrik is by voeding, agterweë te laat. Dit het geblyk dat hulle nog nie ten volle hul belangrike rol as kommunikasie spesialiste binne die voedings konteks besef het nie. Daar is bevind dat die meerderheid van

respondente betrokke is binne 'n multidissiplinêre spanbenadering; maar dat die implementering van 'n meer effektiewe transdissiplinêre benadering egter beperk was. Dit is bevestig deur resultate wat aangedui het dat samewerking met ander professionele persone, soos bv. dieetkundiges, nie deurlopend voorgekom het nie. In terme van opleiding in voedingsterapie, is die meeste opleiding ontvang deur middel van voortgesette opleiding wat aspekte van nutrisie ingesluit het. Voorgraadse opleiding is as beperk beskou in terme van buide teoretiese inhoud asook praktiese toepassing en het ook nie nutrisie aspekte geïnkorporeer nie. In die lig van die duidelike behoefte aan 'n meer holistiese benadering tot kinders met voedingsprobleme is daar aanbevelings gemaak ten opsigte van die insluiting van noodsaaklike nutrisionele aspekte en psigososiale faktore met betrekking tot transdissiplinêre diensverskaffing in Suid-Afrika. Relevante navorsingstemas binne die veld van pediatriese voeding is ook verskaf. Deur huidige perspektiewe te verbreed tot 'n meer holistiese navorsings- en opleidingsbenadering kan diensverskaffing aan kinders met pediatriese voedingsprobleme aansienlik verbeter word.

SLEUTELWOORDE: Vroeë Kommunikasie Intervensie; Vroeë Intervensie; Spraak- taalterapeut; Voedingspesialis; Pediatriese disfagie; Voedingsprobleem; Nutrisionele tekort; Oraal-motoriese vertraging; Wan-nutrisie; Voedingsterapie; Transdissiplinêre spanbenadering.

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LIST OF ABBREVIATIONS

EI - Early Intervention
ECI - Early Communication Intervention
FTT - Failure To Thrive
OFTT - Organic Failure to Thrive
NOFTT - Non-Organic Failure to Thrive
HIV - Human Immunodeficiency Virus
AIDS - Acquired Immune Deficiency Syndrome
LBW - Low Birth Weight
BPD - Bronchopulmonary Dysplasia
NICU - Neonatal Intensive Care Unit
CP - Cerebral Palsy
GER - Gastroesophageal Reflux
ADHD - Attention Deficit Hyperactivity Disorder
OMD - Oral Motor Delay/Disorder
HPCSA - Health Professionals Council of South Africa
SAS - Statistical Analysis System
NEC - Necrotizing Enterocolitis
CHD - Congenital Heart Disease
ENT - Ear, Nose and Throat Specialist

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1. INTRODUCTION

The most critical developmental period in a child's life is the first 36 months and most brain growth occurs within the first two years of life (Smith, 1999). Therefore, early identification and intervention with children at risk, or with an established risk for developmental and communication delay, is essential during this time period if the most effective management is to be possible (Louw, 1997).

In order to gain early access to infants with, or who are at risk for, developmental delay, early interventionists, and therefore speech-language therapists involved in early intervention (EI) need to become aware of the many factors that contribute to a developmental delay (Rossetti, 1996). Nutrition is a primary, fundamental factor with regard to development as "optimal nutrition is the foundation for normal growth and development" (Farber, Yanni & Batshaw, 1997, p.183). Conversely, problems of growth and undernutrition may trigger far-reaching medical, social and developmental consequences (Kessler, 1999). Infant and child health, including nutrition, is therefore prioritized within the primary health care context (Pickering, McAllister, Hagler, Whitehill, Penn, Robertson, McCready, 1998), and it is recognized that the earlier under- or mal-nutrition occurs, the more severe the neurodevelopmental consequences are (Farber, et al., 1997). Nutritional intervention can therefore not be separated from other forms of early intervention (Monckeberg, 1983). Early interventionists are required to develop an understanding of nutritional principles and options for clinical management in order to intervene as soon as possible, and in so doing, maximize every child's well being and developmental outcome (Farber et al., 1997).

Although speech-language therapists provide early communication intervention (ECI) and feeding therapy to infants and toddlers, it is questionable whether they

have acquired sufficient understanding of nutritional issues in order to appreciate the significance of nutrition within the paediatric population. Feeding disorders are commonly discussed in the literature as a nutritional issue (Bayerl & Welford, 1999) and it is suggested that "feeding" needs to be viewed within the broader context of "nutrition", which extends beyond the feeding process alone. Speech-language therapists have tended to focus on the process of feeding in their role as feeding therapists; however, they may not always have placed sufficient emphasis on vital nutritional issues related to developmental outcomes and ECI. By neglecting such issues, speech-language therapists may overlook the relevance of nutrition to the feeding process and even more so to the overall development of a child. The literature on feeding disorders, within the speech-language therapy context, reveals little about possible related nutritional problems, thus reflecting a dearth of knowledge and information, and a need to explore the literature within and beyond the field of speech-language therapy. In order to examine and highlight relevant nutritional issues related to EI and ECI and feeding therapy, a critical review of the literature was conducted.

Reflecting upon the ***traditional role*** of speech-language therapists in feeding intervention and paediatric dysphagia, it appears that focus has typically been on the effect that neuromuscular and structural abnormalities have on the actual process of feeding and swallowing (ASHA, 1989). Upon investigation of the meaning of "feeding problem/disorder", this term was found to refer to "variations in ingestive behaviour that are sufficiently divergent from the norm to result in personal or familial distress, social or developmental risk, or negative health consequences" (Kedesdy & Budd, 1998, p 6). It therefore appears as if speech-language therapists in general have not always realized the full implications of this disorder, specifically when dealing with paediatric dysphagia or feeding problems within ECI. Feeding problems often result in reduced food intake and optimal growth and development may then be inhibited, resulting in poor weight gain or maintenance and an increased risk for nutritional deficiencies

and malnutrition (Lucas & Blyler, 1997) which may lead to failure to thrive (FTT) (Kedesdy & Budd, 1998; Farber et al., 1997). There is growing recognition that feeding difficulties in their various forms are central to the development of FTT for many children (Kessler, 1999).

Farber et al. (1997) define *undernutrition* as the underconsumption of nutrients or energy. If undernutrition is severe and progresses, it could lead to and become *malnutrition,* which may then manifest itself as *failure to thrive.* FTT is also known as a growth deficiency (Lopez, 1997) and clinically refers to infants or young children, generally three years of age and younger (Kessler, 1999), who fail to meet age standards, in both development and growth. Much of the literature reflects the traditional view of differentiating between two major categories of FTT, namely organic (OFTT), which implies that there is an underlying medical condition, and non-organic (NOFTT), which accounts for the majority of cases and is referred to as a psychosocial problem (Smith, 1999). This classification is, however, criticized as it is overly global with many conceptual problems and limited clinical utility (Kedesdy & Budd, 1998). It was therefore decided not to distinguish between OFTT and NOFTT in the current study, but to simply refer to the disorder as FTT.

As there are often many ***factors that interact to cause and maintain feeding problems***, resulting in nutritional deficiencies (Gahagan & Holmes, 1998; Kessler, 1999), FTT may be conceptualized as the product of multiple interacting risk factors, which may be biological, or psychosocial and environmental. In order to provide an overview of the causal patterns of nutritional deficiencies, a schematic model was devised and is presented in Figure 1. The model was designed in correlation with Guralnick's (1997) model of factors influencing developmental outcomes for children, which was a model created as a framework to provide direction for second-generation research into critical issues of practice and principles in the field of EI (Guralnick, 1997).

Etiological constructs from Kedesdy and Budd's (1998, pp. 14-15) classification system were then reorganized to fit into the devised model, which displays interacting causal patterns that may lead to undernutrition, malnutrition and FTT. These causal patterns are organized into psychosocial or environmental factors, and biological or medical factors. The former category is structured in such a way as to incorporate the influencing factors as described by Guralnick (1997), i.e. environmental or family risk; stressors created by child disability or biological risk; and family patterns. Salient points of the model, presented in Figure 1, will be highlighted in the ensuing discussion.

Nutritional risk usually occurs with a wide range of other psychosocial risk factors that increase the risk for poor developmental outcomes (Metallinos-Katsaras & Gorman, 1999). Biological and environmental factors that are considered high risk for feeding disorders, leading to nutritional deficiencies (see Figure 1), are often the same factors that place children at risk for communication disorders (Crais, 1999). This is demonstrated by the increased prevalence of significant feeding disorders in children with medical conditions, such as acute or chronic illnesses, developmental disabilities or severe environmental deprivation such as abuse, neglect, and poverty (see Figure 1) (Kedesdy & Budd, 1998). These are the same factors that may be detrimental to a child's communication and overall development (Rossetti, 1996).

Speech-language therapists therefore often come into contact with ***populations who may be at risk*** for feeding disorders, as well as nutritional deficiencies and growth delays; such as infants and children who are at risk for developmental disabilities, as they have unique problems in acquiring and maintaining adequate nutrition and often have decreased growth potential (Farber et al., 1997). This is due to feeding problems, metabolic disorders, decreased mobility, drug and nutrient interactions and altered growth patterns (see Figure 1) (Lucas & Blyler, 1997; Bayerl & Welford, 1999). Nutritional deficiencies may in turn further affect

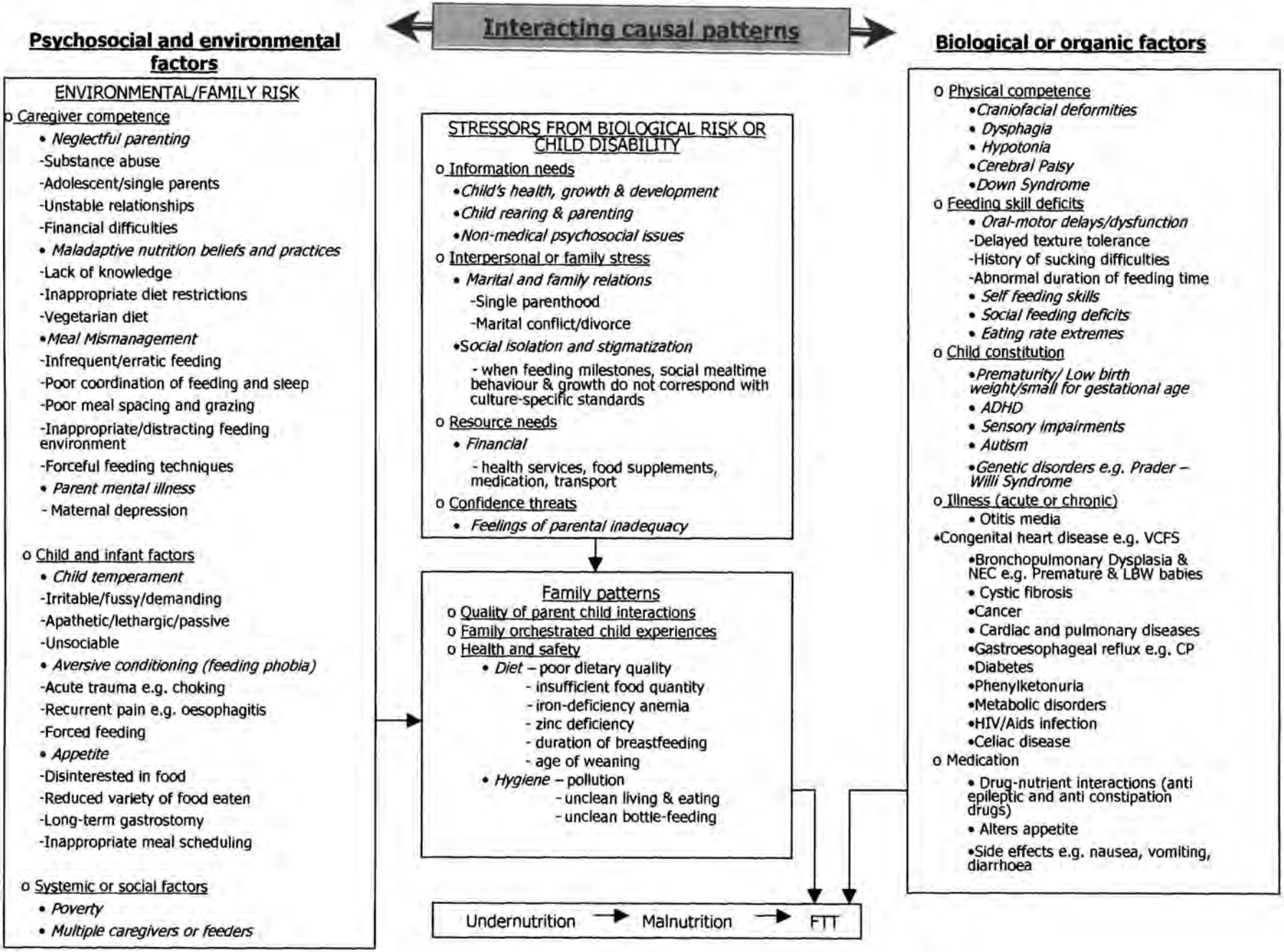


Figure 1: Causal Patterns of Nutritional Deficiencies. Compiled from: Guralnick (1997) and Kedesdy & Budd (1998)

the developmental disability, as they contribute to or exacerbate the initial condition, thus creating a perpetual cycle (Farber et al., 1997). Apart from the growing population of children with paediatric HIV/AIDS in South Africa, other populations include, among many others, premature and low birth weight (LBW) infants, as well as special populations such as those that present with structural anomalies, dysphagia, syndromes, general developmental delay, oral-motor delay and additional problems (Kedesdy & Budd, 1998).

In South Africa, *poverty* (see Figure 1 – Systemic/Social Factors) is a widespread problem and is related to overcrowding in households and a lack of food. Such conditions result in a snowball effect, as overcrowding can lead to infection and disease, resulting in increased nutritional requirements, which are unavailable (Suskind, Murthy & Suskind, 1990). Although more common among the impoverished (Gahagan & Holmes, 1998), FTT is not restricted to low socio-economic status, as it is found at all income levels (Berg, 1987; Kedesdy & Budd, 1998), and in both developing and advanced nations. In the latter, however, the prevalence and importance of malnutrition is often underappreciated, and most of these children have secondary malnutrition in association with an underlying disorder (Fuchs, 1990). One study found that one in three low-weight children are not identified (Smith, 1999). Reasons provided for this finding included social class, where a child of professional parents was more likely to be accepted as small, as were well cared for children who did not have signs of neglect, while children from deprived homes were more likely to be labeled as having FTT (Wright & Birks, 2000).

Socio-economic factors such as poverty, illiteracy, and lack of formal education also pose as underlying causes of the *HIV/AIDS* pandemic in South Africa (HIV/AIDS & STD Strategic Plan for South Africa 2000-2005, 2000), which is currently a great concern for health care services. Children affected with paediatric HIV/AIDS suffer numerous developmental disabilities, including

language disorders, and it has been found that fourteen percent of this population has significant feeding disorders (Prontnicki, 1995). There is also a high prevalence of FTT and malnutrition among HIV/AIDS-infected children (see Figure 1- Illness), and the infant mortality can often be attributed to the effects of malnutrition, which, together with growth failure, often complicate the course of HIV/AIDS infection and the outcome thereof (Eley & Hussey, 1999). Decreased dietary intake, intestinal malabsorption, increased excretion of nutrients, and increased energy requirements are responsible for the growth failure and malnutrition in HIV infection. Many essential nutrients become deficient, which may compound immune deficiency, and declining immune function then allows for infections such as diarrhoea and respiratory infections to become recurrent, which further complicates the growth failure and malnutrition (Eley & Hussey, 1999).

Prematurity and LBW (see Figure 1 – Biological/Organic Factors) are commonly identified as high risk factors for both feeding and communication disorders (Rossetti, 1996). Due to their reduced capacity to adapt to the extrauterine environment, these infants are at an increased risk for many health and developmental problems, as well as language disorders, mental retardation, learning disabilities and academic problems in the long term (Rossetti, 1996; Kedesdy & Budd, 1998). Many complications accompany prematurity and LBW, such as Bronchopulmonary Dysplasia (BPD) (see Figure 1 - Illness), which makes oral feeding and nutrition therapy difficult, leading to an elevated risk of malnutrition, growth retardation, and possible permanent growth stunting (Lucas & Blyler, 1997; Rossetti, 1996). Malnutrition has been cited as a significant problem in newborn nurseries, particularly in premature babies and it is estimated that 5% to 10% of LBW infants may develop FTT (Lopez, 1997). A further confounding factor is that premature infants, particularly those who have been separated from their parents due to lengthy periods of time in a Neonatal Intensive Care Unit (NICU), are at an increased risk for child abuse and neglect

(Berkowitz, 1999). Negative psychosocial factors may therefore ensue which may further affect the growth and development of the child.

Feeding can be complicated in otherwise healthy children by *structural, anatomical, or neuromuscular dysfunction*. Speech-language therapists are familiar with these types of disorders, which may include children with craniofacial anomalies, dysphagia, hypotonia, (see Figure 1 – Physical Competence) and many other conditions that affect muscle tone, coordination, skill acquisition, as well as the ability to communicate (Kedesdy & Budd, 1998), which may further compromise nutritional status.

There is a high incidence of *children with cerebral palsy* (CP) (see Figure 1 – Physical Competence) in rural communities within South Africa (Pickering et al., 1998). As a result of neuromuscular dysfunction, these children display feeding problems and usually demonstrate poor growth and FTT (Prontnicki, 1995). They frequently have poor oral hygiene, with drooling, chewing and swallowing disorders, as well as hyperactive gag reflex, tongue thrust, poor lip closure and inability to chew, which increases the meal time and can limit the amount of food ingested (Faine, 1994; Lucas & Blyler, 1997). *Gastroesophageal reflux* (GER) (see Figure 1 - Illness) is often a further complication in children with CP, as well as in premature babies. GER is especially prevalent in infants younger than 12 months, and is possibly caused by developmental variations in the maturation of the gastrointestinal tract (Kedesdy & Budd, 1998). GER places children at risk for FTT and poor weight gain (Hall, 2001) and can lead to aspiration, which could contribute to recurrent pneumonia, as well as to avoidance behaviours due to the negative association of pain or unpleasant sensations with feeding (Prontnicki, 1995). A *conditioned fear* of eating (see Figure 1 – Child/Infant Factors) can therefore result from negative experiences with eating and can lead to refusal of specific types or textures of food and restricted food intake (Kedesdy & Budd, 1998; Prontnicki, 1995), which jeopardizes nutritional status

once again and may disturb the normal progression and development of feeding skills.

Children with Down Syndrome (see Figure 1 – Biological/Organic Factors) frequently have feeding problems (Lucas & Blyler, 1997) characterized by poor tongue control and sensory feedback, leading to food remaining in the mouth, which results in poor oral hygiene. The accompanying mental retardation and impairment of communication may also hamper the interaction component of feeding and can restrict the child's ability to express food preferences or hunger (Prontnicki, 1995). Congenital heart disease (see Figure 1 - Illness) often accompanies Down syndrome, and can contribute to malnourishment and FTT. Growth retardation resulting from *cardiac problems* is due to the increased energy requirements and insufficient nutritional intake, which results from fatigue, shortness of breath, and recurrent pulmonary infection (Varan, Tokel, Yilmaz, 1999; Fuchs, 1990). *Children with Velocardiofacial Syndrome* represent another population with cardiac problems that are seen by speech-language therapists for developmental and communication disorders (Shprintzen & Bardach, 1995). The presence of cardiac problems requires speech-language therapists to be aware of the implications that the disorder has on nutritional status and on the child's development and progress.

Feeding challenges may be presented when a child has disorders, such as *Attention Deficit Hyperactivity Disorder* (ADHD) (Kedesdy & Budd, 1998), as the medication may have adverse effects on nutritional status by altering appetite (see Figure 1) (Farber et al., 1997; Lucas & Blyler, 1997). In the case of children with a *language delay or hearing loss*, feeding difficulties may arise from the child's limited ability to express needs and wants (Prontnicki, 1995), which requires intervention in feeding and communication. Some genetic disorders may also present feeding difficulties, such as *Prader-Willi syndrome*, which is characterized by mental retardation, hypotonia, initial FTT, with later obesity,

altered energy needs, and feeding problems (Shonkoff & Marshall, 2000; Lucas & Blyler, 1997) (see Figure 1 – Child Constitution).

Many of the above-mentioned populations also present with *oral-motor delay/disorder* (OMD) (see Figure 1 – Feeding Skill Deficits). As OMD may cause the child to be a difficult feeder, extra stress may be placed on the child and mother, which may affect their interactional style, leading to maladaptive interactional patterns (see Figure 1 – Family Patterns). In addition to feeding therapy, speech-language therapists could play a role in facilitating improved communication and more successful and pleasurable interaction between mother and child within this population (Rossetti, 1996).

OMD falls directly under the expertise of the speech-language therapist as the disorder entails sucking, chewing and swallowing difficulties, which necessitates intervention in pre-speech oral-motor development, speech sound production, as well as feeding and swallowing processes (ASHA, 1989). Feeding problems may result from OMD, which can limit the variety of foods offered, leading to inadequate nutrient intake as well as prolonged mealtimes (Faine, 1994). This could obviously then contribute to undernutrition and the development of FTT. Children with FTT have been reported to display characteristics of OMD, such as a history of sucking difficulties, abnormal duration of feeding times, poor appetite, delayed texture tolerance and difficult feeding behaviour (Reilly, Skuse, Wolke & Stevenson, 1999). It is therefore likely that speech-language therapists will come into contact with children who present with OMD as well as FTT, which requires speech-language therapists to be aware of the nutritional implications in order to ensure appropriate treatment, referral and management in terms of the feeding disorder, communication, as well as the nutritional needs.

While speech-language therapists need to be alerted to clients with OMD who may be at risk for FTT, the opposite is also true, as FTT may be a sign that OMD

is present. A study by Reilly et al. (1999) revealed that less than 20% of the infants with FTT and OMD had been referred for further investigation, which resulted in the failure to identify OMD as a contributing factor to the FTT (Reilly et al., 1999). An explanation for this finding may be that when feeding problems occur with other significant health care problems, such as malnutrition, feeding problems may be entirely overlooked (Kedesdy & Budd, 1998). Sometimes the normal succession of typical feeding stages is also hindered, due to the view that the development of proper eating is much less important than the underlying medical condition, however, the eating or feeding problem could be compounding the medical condition (Gahagan & Holmes, 1998). This demonstrates the importance of conducting multidisciplinary examinations of the infant with FTT, including neurological, developmental and oral-motor assessments (Reilly et al., 1999), and highlights the importance of team discussions where the relationship between the child's feeding behaviour and other medical conditions can be assessed (Bryan & Pressmen, 1995). Speech-language therapists are therefore required to be able to recognize FTT, and then identify possible OMD, which may be accompanying and contributing to the FTT, and yet be overlooked by other professionals.

In order to identify FTT, awareness is required about the prevalence of FTT, as well as the risk factors, associated conditions, causes and consequences of this disorder. An estimated 5-10% of all children are affected by FTT (Smith, 1999; Gahagan & Holmes, 1998) and childhood feeding disorders are prevalent in children who exhibit this condition (Kedesdy & Budd, 1998). FTT may cause further significant ***health, developmental and social consequences*** (Kedesdy & Budd, 1998). Figure 2 has been created to organize the literature review and clearly illustrate the consequences and conditions associated with FTT/ growth deficiency.

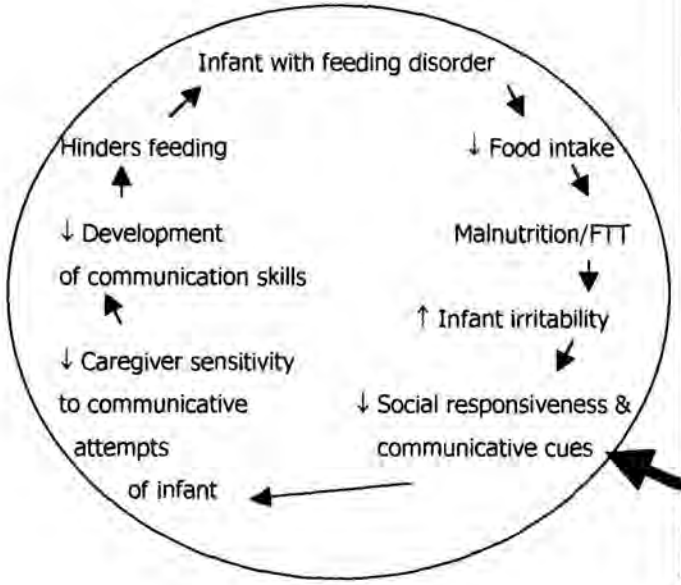
Conditions associated with FTT/Growth Deficiencies

Health

Infection- Malnutrition Cycle

↓ immunological resistance

malnutrition → ↓ immunity → ↑ Infection *(especially otitis media, gastro-intestinal & respiratory infection)* → malnutrition



Developmental problems

•Growth retardation
-Affects hormonal functions, immune functions & organ development, therefore affects physical growth
-Growth not affected in all cases, e.g. mild & extreme food selectivity

•Motor skills
-Deficits in perceptual-motor development
-Poorer coordination, agility, strength & balance
-Diminished physical activity
-Limited motor responses
: infantile posturing
: ↓ motor activity
: below-age locomotive skills
: soft neurological signs
: poorer gross & fine motor performance

•Cognitive delays
-Long term impairment in cognitive development
-Lower IQ & intelligence than normal children
-Poorer academic performance than normal children
-Delayed language development

•Communication problems
-Decreased vocalizations
-Verbal signaling & vocal responses (elicited & spontaneous)
-Unclear communicative cues

Link between communication and feeding problems

Social & behavioural problems

•↑ fussiness, whining, crying, irritable, demanding
↕
↓ *positive caregiving*

•↑ fatigue & ↓ motivation, less active, ↓ attention span, less task orientated, lethargic, listless
↕
↓ *learning*

•Moody, rejecting, distractible
↕
Further disruption of eating & sleeping patterns

• ↓ social responsiveness

•Delayed social & behavioural development

•Long term impairments in socio-affective competence

Figure 2: Consequential Patterns of Nutritional Deficiencies

Compiled from: Kessler & Dawson (1999) and Kedesdy & Budd (1998)

In terms of *health*, a child's ability to resist infection is compromised by malnutrition, which leads to an increased risk for and susceptibility to infection, especially for otitis media, and for gastrointestinal and respiratory infections (Kedesdy & Budd, 1998; Suskind et al., 1990). A vicious circle is then created, referred to as the infection-malnutrition cycle (see Figure 2), whereby with each successive illness, the child becomes more malnourished, and more susceptible to infection (Suskind et al., 1990). Chronic otitis media is a risk factor for nutritional problems (see Figure 1), as well as for developmental and communication disorders, and is therefore of particular concern to speech-language therapists, as speech, language and hearing are often implicated (Rossetti, 1996). Speech-language therapists should therefore become alert to this population who may require prompt services to minimize detrimental effects of malnutrition and otitis media on communication.

Growth and development are affected by nutritional deficiencies at an early age (Smith, 1999). The neurodevelopment of a child can be severely affected by malnutrition, which can reduce brain cell count by as much as 20% (Farber et al., 1997), thus causing central nervous system changes, as well as important biochemical, endocrinological, immunological, and gastrointestinal alterations (Kedesdy & Budd, 1998). Development may be directly affected from deficits in nutrition to the brain, while development may be indirectly affected by reduced physical energy for learning and exploring, which may lead to slower acquisition of skills (Grantham-McGregor, Walker & Chang, 2000; Farber et al., 1997).

Three general areas of development appear to be most affected by malnutrition, namely growth, cognition, which is related to communication development, and motor skills (see Figure 2) (Steward & Garvin, 1997; Gahagan & Holmes, 1998; Lopez, 1997). The literature reveals that children with FTT may display delayed *motor skills* such as coordination, agility, strength and balance, as well as delayed *intellectual* and *language* development, and many studies have

concluded that these effects of malnutrition are often irreversible (Smith, 1999; Ballabriga, 1990). Significant effects on *communication* are documented in comparative studies between children with and without FTT. Children with FTT have been found to demonstrate fewer vocalizations, less mature verbal signaling and diminished vocal responses, as seen by fewer elicited and spontaneous vocalizations (Steward & Garvin, 1997; Kedesdy & Budd, 1998). They are also inclined to fuss, whine and cry more when approached (Steward & Garvin, 1997), which may hinder positive care-giving. Speech-language therapists may therefore have a significant role to play in combining ECI with feeding intervention within this population.

Throughout infancy and early childhood, communication and feeding are linked, as indicated by the positive correlation between high quality feeding interactions in the initial years of life, and a child's later cognitive and linguistic competence (Crais, 1999). Feeding time is a critical time for parent-child interaction as it forms a basic social activity (Bryan & Pressman, 1995). Successful feeding interactions contribute positively to physical growth as well as cognitive and language skills, and emotional development (Hall, 2001).

Feeding and communication demonstrate a reciprocal relationship, which depends on the characteristics and skills of both the child and caregiver that contribute to successful development. For example, infants may display feeding problems that hinder food intake, which can lead to malnourishment. Children who are malnourished may then exhibit irritability and decreased social responsiveness, as well as unclear communicative cues (Wright & Birks, 2000; Steward & Garvin, 1997). This in turn affects the caregiver's ability to recognize their communicative attempts and respond appropriately, which further inhibits the development of successful communication skills (Crais, 1999), and can hinder feeding, leading to further malnutrition and possible FTT (Steward & Garvin,

1997). This illustration demonstrates the spiral of negative effects that may ensue from a feeding disorder (see Figure 2).

One of the important areas speech-language therapists focus on in EI is training the caregivers to engage the child in interaction, and respond in ways that will enhance and increase more conventional language by the child (Louw, 1997). This goal is directly related to two of the aims of nutritional intervention, which is to create positive interactions in the parent-child relationship, and to create a positive feeding environment (Smith, 1999). High quality interactions are then positively associated with the child's subsequent cognitive and linguistic competence, and more secure attachments to caregivers (Laude, 1999).

Children with FTT may also display delayed *social and behavioural* development (Smith, 1999), as illustrated in Figure 2, and often may have poor relationships with peers and adults (Grantham-McGregor et al., 2000), which is related to the finding that poor growth in childhood is a marker for a number of psychosocial problems (Raynor & Rudolf, 2000). Children may be less active, irritable, fussy, and demanding, demonstrate a shorter attention span, and be less task-orientated. Behavioural characteristics, such as being moody, demanding, rejecting, or distractible can play an important role in every day events, and may contribute to disruption in sleeping and eating patterns (Gahagan & Holmes, 1998).

It is evident that children subjected to malnutrition in early life are at risk for developmental disabilities. Studies have, however, suggested that a stable home environment and appropriate stimulation can buffer the effects of undernutrition, leading to relative preservation of intellectual function (Shonkoff & Marshall, 2000). Lopez (1997) also presented findings supporting the efficacy of EI programs that promoted a nurturing home environment, as this was found to reduce developmental delays commonly found in infants with FTT. Other studies

have reported that despite malnutrition, intellectual development has been normal due to positive maternal-child interactions and a positively reinforcing environment (Ballabriga, 1990). It therefore appears as if the long-term outcome of children with severe malnutrition is largely dependant on the quality of the child's environment (Grantham-McGregor et al., 2000). These results relate to the finding that over time, socio-economic status and environmental factors become more predictive of cognitive function than medical factors (Hershberger, 1996).

In South Africa, where poverty abounds, families cannot always afford health services, medications, adequate food or supplements. However, despite such fundamental disadvantages, appropriate stimulation and a nurturing home can defy the negative effects of malnutrition, leading to positive advancements in development (Meisels & Shonkoff, 2000). A lack of environmental stimulation, together with poor nutrition can, however, impede normal cognitive function, and lead to developmental impairment (Ballabriga, 1990). Speech-language therapists can play a vital role in fostering optimal development, as they are trained and skilled in stimulating children to enhance cognition, language, speech, as well as general development (ASHA, 1989). Speech-language therapists must recognize their role in identifying families at risk, training parents, supporting families and striving for maximal development in their children (Rossetti, 1996). By fostering supportive, loving relationships between children and their caregivers, even a child with extensive neurological vulnerabilities may have an opportunity to thrive (Shonkoff & Marshall, 2000).

Multiple ***professional disciplines*** deal with childhood feeding disorders, due to the complex interaction of physiological and psychological systems that comprise the feeding process (Kedesdy & Budd, 1998). Disciplines most often involved in the intervention of feeding disorders are medicine, nutrition, nursing, speech-language therapy, occupational therapy, physiotherapy, psychology and social

work, and feeding disorders may be treated within a multi- or transdisciplinary team approach (Kedesdy & Budd, 1998). The child's caregivers should also be considered primary team members, as they may have a significant effect on the outcome of the dysphagia program (Sheppard, 1995). The team, including the nutritionist needs to collaborate with the family to identify feeding, growth and nutritional issues (Bayerl & Welford, 1999). The first and most basic level of discussion that the team needs to engage in should center on issues that include aspiration, oral-motor and feeding programs, and adequate nutrition (Bryan & Pressman, 1995). If a nutritionist is not a team member, then referral may be necessary. However, in order to refer children with nutritional problems, the team members have to be able to identify risk factors conducive to nutritional problems, and this requires an awareness and knowledge of such issues.

Special education or early intervention programs also provide the context in which feeding assessment and intervention can be conducted, even though the services and programs may be directed toward other child issues, such as communication disorders and fine motor delays (Kedesdy & Budd, 1998). Research has confirmed that many children participating in early intervention programs are at risk for feeding and growth delays, which necessitates the inclusion of nutritional services within these programs (Bayerl & Welford, 1999; Monckeberg, 1983). If adequate nutrition can be achieved, a child will be able to participate more fully in early intervention programs, and therefore experience more benefits and advancements in development (Bayerl & Welford, 1999), thus ensuring more effective service delivery.

In conclusion, "oral motor dysfunction, lack of feeding skills, and the often co-occurring communication difficulties may affect nutrition by distorting requests for food, interfering with expression of hunger and food preference, and preventing foraging, as well as by interfering with food intake" (Sheppard, 1995, p 50).

The role of speech-language therapists, in the past, has often focused primarily on communication disorders or the mechanics of feeding disorders, without fully considering the impact of nutritional needs on a child's development and communication. In order for speech-language therapists to provide holistic ECI services, and function effectively within a transdisciplinary team, especially within the South African context, they need to investigate opportunities for more effective service delivery by means of research and application of knowledge in clinical practice. They ultimately need to be alert to all issues that will promote early intervention to all children in need of such services (Rossetti, 1996).

Before the competencies of speech-language therapists can be expanded through enhanced knowledge and skills regarding nutritional issues in the paediatric population, their current level of functioning needs to be explored. Insight is therefore required regarding their knowledge of the causes and consequences of nutritional deficiencies, populations at risk, how to identify clients requiring nutritional intervention, treatment options, as well as the role of the speech-language therapist in dealing with such clients. Research may highlight a need for further training of speech-language therapists in nutrition, which could then lay the foundation for enhancing future training by incorporating nutritional issues. Ultimately, such research would contribute to ensuring the efficacy of speech-language therapists' services to the diverse population who require EI. Based on the literature review, a problem was identified, and a research question was formulated: *What are the experiences and perceptions of speech-language therapists regarding nutritional issues related to feeding disorders in EI and ECI?*

2. METHODOLOGY

2.1. RESEARCH AIM

The main aim of the research is to explore the experiences and perceptions of speech-language therapists with regard to nutritional issues in children who require feeding intervention and/or Early Communication Intervention (ECI).

OBJECTIVES

The following objectives were identified and formulated in order to achieve the above aim.

- To determine the extent of the respondents' contact, in ECI, with clients who have, or may be at risk for, feeding disorders and therefore may be at risk for nutritional deficiencies.

- To describe the nature of early intervention services, including assessment and treatment, provided by the respondents to clients with feeding disorders and nutritional deficiencies.

- To investigate the respondents' perceptions of the role of speech-language therapists in the early intervention of children with feeding disorders and nutritional deficiencies.

- To describe the respondents' participation in a team approach to early intervention with clients with feeding disorders and nutritional deficiencies.

- To describe the respondents' perceptions of their theoretical knowledge and practical skills during early intervention with clients who have feeding disorders and possible nutritional deficiencies.

2.2. RESEARCH DESIGN

In order to achieve the purpose of this assignment, a qualitative research design was employed, which permits an understanding of individuals' views, attitudes and behaviour (Moore, 2000). A descriptive survey research design was selected, as this is a basic approach that looks closely at current phenomena and allows inferences to be drawn about a particular population (Leedy & Ormrod, 2001). Surveys are the most commonly used social research method (Moore, 2000) and are described as the "collection of information on a wide range of cases" where the emphasis is on the frequency of answers to the same question by different people (Bless & Higson-Smith, 1995: 43). Surveys are often used to determine people's beliefs, attitudes, opinions, characteristics, knowledge, and past or present behaviour (Neuman, 1997; Leedy & Ormrod, 2001). A survey would therefore serve as an appropriate information gathering tool in the investigation of speech-language therapists' perceptions regarding nutritional issues related to feeding disorders in ECI.

Survey research can be conducted using face-to-face interviews, a telephone interview, or a written questionnaire (Leedy & Ormrod, 2001). To achieve the aims of the current study, the data collection method selected was in the format of a postal survey or written questionnaire. Postal surveys afford many advantages, as they can be sent to a large number of people at varying distances without extensive cost as is incurred in personal and telephone interviews (Bless & Higson-Smith, 1995). Furthermore, anonymity can be ensured through postal surveys, which allow people to respond more truthfully than they would in interview situations (Leedy & Ormrod, 2001).

Although the descriptive survey method was selected as most appropriate for the current study, this method is not without its limitations. The use of written questionnaires could pose as a potential threat to the validity of the study. The

most common problem accompanying postal surveys is that of a low response rate (Bless & Higson-Smith, 1995; Bailey, 1994), which may cause the sample to be biased as the people who return the survey are not necessarily representative of the original sample (Leedy & Ormrod, 2001). Internal validity would therefore be affected. To avoid a low response rate, control measures and guidelines gained from the literature can be effectively implemented. Internal validity may also be threatened if the survey instrument is not adequate and suitable for the purposes of the study (Foxcroft, 2000). The questionnaire would therefore have to be carefully compiled in accordance with the guidelines that the literature offers, concerning content, as well as question and response types (Leedy & Ormrod, 2001; Bailey, 1994). Furthermore, a pilot study should be conducted to fine-tune the questions and pre-test the adequacy of the questionnaire (Leedy & Ormrod, 2001; Neuman, 1997).

As "the survey design makes critical demands on the researcher that, if not carefully respected, may place the entire research effort in jeopardy" (Leedy & Ormrod, 2001:196), the drawbacks of using postal surveys were accounted for during the compilation of the questionnaire, as well as in the analysis and interpretation of results.

2.3. RESPONDENTS

The target population for this study included speech-language therapists involved in ECI and/or feeding therapy, as the aim of a survey is to draw inferences about a particular population (Leedy & Ormrod, 2001).

2.3.1. *CRITERIA FOR THE SELECTION OF RESPONDENTS*

The criteria for the selection of speech-language therapists to participate in the study was as follows:

- ***Professional qualifications:*** The respondents were required to hold a recognized qualification in speech-language therapy, and be registered with the Health Professional Council of South Africa (HPCSA), as practising speech-language therapists formed the target population for this study.

- ***Early Intervention work context:*** The respondents were required to have experience in providing ECI and/or feeding therapy to infants and toddlers from birth to three years old. An early intervention work context was necessary as the questionnaire was directed towards the services provided to the birth to three population, based on the standpoint that early identification and intervention with children at risk, or with an established risk, for developmental and communication delay is essential during the first 36 months, if the most effective management is to be possible (Louw, 1997).

- ***Geographical area:*** The respondents had to practise within the Gauteng area, specifically Johannesburg and Pretoria. It was decided not to include the whole geographical region of South Africa due to physical, economic and time constraints.

- ***Language:*** Respondents were required to be proficient in English, as the questionnaire was compiled in this language and the main prerequisites for the use of self-administered questionnaires are sufficient literacy and familiarity with the language (Bless & Higson-Smith, 1995).

2.3.2. *SELECTION PROCEDURE AND SAMPLE SIZE*

A criterion for the quality of a survey is the number of surveys that are completed and how large and representative the sample is (Bless & Higson-Smith, 1995). The usual sampling procedure whereby a large sample is randomly

selected that is representative of a target population (Mouton, 1996) was, however, not appropriate for the present study. EI is a new and developing area of focus within all health care services, including speech-language therapy, and ECI is a new field that is still in the process of being fully integrated into clinical practice in South Africa (Louw, 1997). Therefore, as few speech-language therapists would be actively involved in ECI, a non-probabilistic sample of convenience was selected as the most suitable option whereby all available therapists involved in ECI who were located in the specified geographical region, were identified (Mouton, 2001). The sample size would therefore be dependent on the number of available therapists who complied with the set criteria, and although the sample size would not be large, it would be representative of the target population. The study aimed to achieve a sample size of at least 30 respondents, and it was realized that due to the small sample size, all efforts would have to be employed to maximize the response rate.

2.3.3. *DESCRIPTION OF RESPONDENTS*

As 49 questionnaires were posted, it was possible to maintain a high level of contact with the respondents throughout the process of data collection. Persistent contact with the respondents may have contributed to the high response rate, as 32 questionnaires were returned having been adequately completed. This represents a 65% response rate, which, according to Leedy and Ormrod (2001), is possible when the respondents understand the purposes and benefits of completing the questionnaire. The biographical data of the respondents is set out in Table I. The data was obtained from the respondents' responses to Section A of the questionnaire. (N = Number of respondents)

Table I: Description of Respondents (N=32)

DEMOGRAPHICS	SAMPLE	PERCENTAGE	TOTAL (N)
Highest qualification	-B – degree	75%	24
	-M – degree	22%	7
	-Doctorate	3%	1
Training institution	University		
	-Witwatersrand	41%	13
	-Pretoria	38%	12
	-Durban-Westville	13%	4
	-Cape Town	6%	2
	-Warsaw	3%	1
Year of qualification	-1998-2000	53%	17
	-1993-1997	16%	5
	-1990-1992	16%	5
	-1984-1989	16%	5
Work experience in ECI and/or feeding therapy	-1-3 years	50%	16
	-4-7 years	25%	8
	-8-10 years	16%	5
	-11-13 years	9%	3
Work context *	- Private practice	34%	11
	- Hospital (NICU)	63%	20
	- Hospital high care paediatric unit	53%	17
	- Hospital general paediatric ward	72%	23
	- Clinic, e.g. multidisciplinary private clinic	19%	6
	-Community clinic	9%	3
	-Special school	16%	5
	-University	16%	5
	-Other – CP Clinic	9%	3

* Note that many of the respondents were involved in more than one work context, which explains why the total percentage for work context exceeds 100%.

The majority of respondents indicated that they had received their training at the University of the Witwatersrand (41%) and the University of Pretoria (38%), which may be justified by the fact that the study was conducted in the geographical area of Johannesburg and Pretoria. It was also evident that most of the respondents (75%) had achieved their Bachelor's degree as their highest qualification, with 22% having their Master's degree, and 3% with a Doctorate degree. Half of the respondents (50%) had 1 to 3 years of experience in ECI and/or paediatric feeding, with only 9% indicating more than 10 years of experience in this particular field. These findings correlate with those of Haasbroek (1999) who found 51% of respondents had 1 to 3 years of experience, and again only a small percentage of 16% had more than 10 years. This may be due to the fact that ECI was only introduced to the South African context in 1978 (Louw, 1997), and although some universities, such as the University of Pretoria have provided ECI training since 1989, other universities have only included ECI into their curriculum in more recent years (Haasbroek, 1999). Of the respondents, 48% graduated within the last three years, between 1998 and 2000, which corresponds to the 50% of respondents who had 1 to 3 years of experience. It may be presumed that approximately half of the respondents working in the field of ECI and feeding disorders are recent graduates. Furthermore, the vast majority of the respondents indicated their involvement in a hospital work context (63%, 53% and 72% for hospital NICU, high care paediatric unit, and general paediatric division respectively). This implies that the majority of the respondents working within hospitals and involved in ECI and feeding therapy are recent graduates with less than 3 years of experience.

2.4. MATERIAL AND APPARATUS

An appropriate and adequate survey instrument is a critical component to the research study as it affects the internal validity (Foxcroft, 2000). The design of a

comprehensive and suitable questionnaire was therefore essential to achieve the objectives of the research project. The rationale for the choice of a questionnaire, as well as the aim and content of the questionnaire is described forthwith.

2.4.1. *JUSTIFICATION OF THE USE OF A QUESTIONNAIRE*

The particular type of survey selected for the current research project was a written questionnaire, which would serve as a measuring instrument and a form of data collection (Mouton, 2001; Bless & Higson-Smith, 1995). This appeared to be the most appropriate form of survey, as a questionnaire can be used to gather data about the respondents' knowledge, opinion and behaviour (Neuman, 1997).

The use of a questionnaire presents many practical benefits, such as their speed and ease of processing. A questionnaire can be conducted at a single point in time, thereby collecting data within a short period (Bailey, 1994), which was important, considering the time constraints of the present study. Questionnaires are also easy to administer and flexible, as they can be used to collect a wide range of information directly from the participants without the time and expense incurred in personal or telephonic interviews (Moore, 2000; Bless & Higson-Smith, 1995). Each respondent is exposed to a uniform document with the same wording, which allows the questionnaire to be easily standardized (Bless & Higson-Smith, 1995). Quantitative comparisons are also possible as the questionnaire provides a fixed set of questions and systemically classified responses (Bailey, 1994).

Although there are many benefits to using postal surveys, there are a number of limitations that need to be considered. The typical return rate of mailed questionnaires is 50% or less (Leedy & Ormrod, 2001), reflecting a major

problem of low response rates, which can affect the quality of research (Neuman, 1997; Bailey, 1994; Bless & Higson-Smith, 1995). Efforts would therefore have to be made to maximize the return rate by implementing suggestions found in the literature. These include telephoning respondents before and after posting the questionnaire, motivating the respondents by emphasizing the importance and benefits of the study in the cover letter, and including a self-addressed envelope with return postage (Leedy & Ormrod, 2001; Foxcroft, 2000).

As the researcher is not present to supervise the completion of the survey, a further common problem is the possible unsatisfactory completion of questionnaires, which may nullify part of the data. The lack of researcher presence may, however, present advantages, as it prevents researcher bias such as poor tester reliability and inconsistency of response interpretation, as well as a possible negative effect of the interviewer on the respondent that may occur in personal and telephonic interviews (Foxcroft, 2000; Neuman, 1997). By mailing the questionnaire, the respondent's would have the liberty to complete the questionnaire in their own surroundings and at their own convenience, without the pressurizing presence of the researcher to jeopardize the accurate completion of the form (Leedy & Ormrod, 2001; Foxcroft, 2000).

In spite of the apparent limitations, it was decided to employ a postal survey as the means of data collection. A written questionnaire was found to be the most cost and time efficient method and the most suited to the purposes of the study. After identifying possible disadvantages of postal surveys, measures could also be implemented to avoid and overcome the limitations.

2.4.2. *AIM OF THE QUESTIONNAIRE*

The aim of the questionnaire was to gather information concerning the perceptions of speech-language therapists working in EI regarding feeding disorders and related nutritional implications.

2.4.3. *CONTENT OF THE QUESTIONNAIRE*

Based on an in-depth literature review and in conjunction with the study's objectives, the following main areas were included in the questionnaire: biographical information; service delivery; team involvement; and attitudes regarding feeding problems and the related nutritional deficiencies. In relation to each of the study's objectives, the content of each section of the questionnaire is presented as follows.

Section A: Biographical Information

Information was obtained about the respondents' qualifications, training institution, years of experience in ECI and/or feeding therapy, as well as work environment in which they have provided ECI and/or feeding therapy. This information was necessary to describe the respondents, and to draw possible correlations with other questions in the questionnaire. The identifying information was presented first in the questionnaire, as it is suggested that a meaningful context be established initially, in which factual, non-threatening, easy questions are asked in order to foster a feeling of competency and confidence in the respondent (Neuman, 1997; Bless & Higson-Smith, 1995).

Section B: Service Delivery

Oral-motor disabilities, which include feeding disorders, have traditionally formed part of the expertise of the speech-language therapist (ASHA, 1989). The primary goal of treatment of feeding disorders, such as paediatric dysphagia, is to facilitate proper nutrition and hydration (Hall, 2001) and there is a close relationship between feeding disorders and nutritional issues. Knowledge about the intervention services of feeding disorders would therefore provide insight into the level of intervention within the broader context of nutrition.

In order to determine the extent of the respondents' contact with clients who have or may be at risk for feeding disorders as well as nutritional problems, as stated in *Objective 1*, information was sought regarding the frequency of contact with clients who may be at risk for developmental and communication disorders, feeding problems as well as nutritional deficiencies, as these disorders share the same risk factors (Crais, 1999). Particular populations were included who frequently have nutritional problems, for example, premature and LBW babies, as it is documented that malnutrition is a significant problem in newborn nurseries, particularly in premature babies, and it is estimated that 5% to 10% of LBW infants may develop FTT (Lopez, 1997). *Objective 1* was then further explored by asking the respondents to estimate the percentage of their total clients, 0-36 months, who presented with feeding disorders, as well as the percentage of their clients with feeding disorders who also presented with nutritional deficiencies. Furthermore, questions were asked regarding the associated problems occurring with the feeding disorders, and reasons for referring clients to other professionals.

In order to achieve *Objective 2*, i.e. the nature of EI services provided to clients with feeding disorders and nutritional deficiencies, questions were directed toward methods of evaluation and specific areas included in the evaluation and

treatment of infants with, or at risk for, feeding disorders as well as nutritional deficiencies. This was to ascertain the actual role of the speech-language therapist within a specific team approach (Rossetti, 1996), however, the respondents' views of what their role should be in this context as stated in *Objective 3* may differ from what they actually do, and this is addressed in Section D.

Section C: Team Involvement

In order for early intervention services to be effective, contributions are required from professionals from many different disciplines (Meisels & Shonkoff, 2000). Feeding disorders are treated by multiple professional disciplines, which may see the child in the context of a multi- or transdisciplinary team, or may manage different aspects of the problem in different settings (Kedesdy & Budd, 1998; Bryan & Pressman, 1995). Primary health care has entered into an era in which highly qualified professionals are required to stop defending their professional boundaries, and enter into a transdisciplinary approach where disciplinary boundaries are transcended, professional expertise compliment one another, and limited skills are enhanced (Uys & Hugo, 1997). It is therefore essential that professionals understand the extent and boundaries of their own expertise, as well as the roles, functions and skills of other disciplines involved in childhood feeding disorders and EI (Kedesdy & Budd, 1998; Louw, 1997). This paradigm shift is of particular importance within South Africa, where clients cannot always afford all of the required services, and where there is a shortage of professionals to handle the enormous case load (Uys & Hugo, 1997).

The aim of section C was therefore to address *Objective 4* of the study, which was to describe the respondents' application of a team approach to EI with clients with feeding and nutritional disorders. The respondents were asked whether they followed a team approach and whether the nature of team

collaboration was interdisciplinary, multidisciplinary or transdisciplinary. A question was also directed at establishing which other professionals comprised the team and whether if it was easy to develop a network between professionals, which may give an indication of the attitudes among the professionals regarding team work.

Section D: Training and Attitudes regarding Feeding Problems and Related Nutritional Deficiencies

Professionals interested in forming a team must have confidence in sharing what they know, and be prepared to expand their knowledge (Bryan & Pressman, 1995). Speech-language therapists need to become aware of the many factors that contribute to a developmental delay (Rossetti, 1996). Knowledge is therefore required in a variety of areas, such as developmental anatomy, physiology, neurological sequences, as well as the effects of problems in these areas, and normal infant development in all developmental domains (Louw, 1997). Nutrition appears to affect all such areas. Knowledge will allow the identification of issues of concern outside specific disciplines, which is necessary for accurate referrals to be made, and for effective functioning within a transdisciplinary team (ASHA, 1989). Part of the speech-language therapist's role is also to provide information to families regarding many issues related to services (Rossetti, 1996), which cannot be done professionally or with confidence if the appropriate knowledge is lacking.

The attitudes and perceptions of the respondents were therefore explored, regarding their opinion of their own theoretical knowledge and practical skills during EI with clients who have feeding and nutritional disorders, as stated in *Objective 5*; as well as their view on the role of speech-language therapist within this context as stated in *Objective 3*. As the role of the feeding specialist within the team is most often performed by the speech-language therapist (Bryan &

Pressman, 1995), it was necessary to establish whether they had received clinical and theoretical training in feeding therapy, which could affect their knowledge and skills, as well as their views on their role. Questions were also directed towards whether this training had included aspects of nutrition, to determine whether nutrition needs to be incorporated in such training. The above information was included to illuminate the perceived competencies of the respondents, as well as to identify possible barriers to effective service delivery.

2.4.4. *COMPILATION OF THE QUESTIONNAIRE*

2.4.4.1. *General*

Practical guidelines were gleaned from the literature in order to construct an efficient, respondent-centered questionnaire that would encourage participants to be co-operative, and that would yield responses that could be used and interpreted (Leedy & Ormrod, 2001). The following general guidelines were obtained from sources such as Moore (2000), Neuman (1997), Bless and Higson-Smith (1995), Bailey (1994) and Foxcroft (2000).

- A cover letter was carefully composed to convey the importance of the study whilst considering possible concerns of the respondents, such as their limited time. The cover letter was attached to the questionnaire and is presented in Appendix A.
- A letter of informed consent was composed and sent with the questionnaire in order to ensure and document the respondents' voluntary participation in the study. The informed consent form is presented in Appendix B.
- A list of abbreviations and a description of terminology used in the questionnaire was included with the questionnaire to ensure that all respondents had a uniform understanding of terms (see Appendix C).

- Clear, brief instructions were provided for answering the questions.
- An estimate of the required time to complete the questionnaire was provided in the cover letter.
- Simple, clear, unambiguous language and wording was used to ensure that questions were easily understood.
- Efforts were made to avoid leading questions or projecting personal biases into the wording of question and answer categories.
- The questionnaire was designed attractively to appear professional.
- The questionnaire was well spaced and easy to follow.
- Questions were placed in a logical order.
- The questions were made relevant to the study's aim and sufficient questions were asked to obtain adequate information.
- Questions that were time consuming to answer were excluded
- The respondents were thanked for participating in the research study.

2.4.4.2. *Question Types*

As suggested by a number of authors, open- and closed-ended questions were included in the questionnaire in order to gain the benefits from both. The majority of the questionnaire comprised closed-ended questions. These are easier for respondents to understand and answer, and are less time consuming for both the respondent and researcher, as the answers are standard and easier to code and analyze (Moore, 2000). Open-ended questions were kept to a minimum, as they tend to be time-consuming and mentally exhausting for the respondent and researcher (Leedy & Ormrod, 2001). It was, however, necessary to incorporate a few open-ended questions, which provided an additional option if the presented answers were insufficient, or if there were potentially too many answers to list (Moore, 2000). Furthermore, a certain degree of self-expression and personal general opinion from the respondents was also allowed for (Foxcroft, 2000). The

questionnaire was concluded by an open-ended question to obtain suggestions and to determine whether anything of importance to the respondent had been omitted (Bailey, 1994).

2.4.4.3. *Response Types*

Based on the above rationale, numerous types of closed-ended questions were used in the questionnaire:

- The following rating scales were made use of to evaluate the phenomenon of interest on a continuum (Leedy & Ormrod, 2001): Always/often/sometimes/never was used in the majority of category questions, in particular Questions 9, 10, 11, 12, 16 and 23, while often/sometimes/ never/ uncertain was used in Questions 4 and 8. Question 21 displayed the options of excellent/ good/ average/ poor in order for the respondents to describe their perceptions of their own competencies.
- Questions 3, 5, 7, 13, and 18 were presented as checklists where the respondents were required to mark the appropriate options from a series of possible answers (Leedy & Ormrod, 2001).
- Yes/no questions were made use of in Questions 6, 15, 17, 19, 20, 22 and 24. It was realized that yes/no responses do not always accommodate all respondents, so a third category of "unsure" was added to Question 6. Questions 17 and 24 were used as yes/no questions in order to lead on to an open question.

The category "specify other" was used at the end of Questions 1, 3, 8, 9, 10, 11, 12, 13, and 16 in order to increase the flexibility in answer categories. This allows for the respondents to insert important answers that were not provided. Open-ended questions were then also included in Questions 14, 17 and 24.

These allowed respondents to express themselves in detail without limiting them to a fixed response category. Opportunity was therefore provided to them to clarify their responses and views.

2.4.4.4. *Description of the Questionnaire*

A nine-page questionnaire comprising 24 questions was designed with space for the respondent number and the coding of responses. The respondents could complete the questionnaire in approximately half an hour. The research instrument was made available in English. A copy of the questionnaire is provided in Appendix D.

2.4.5. *RELIABILITY AND VALIDITY*

The objective of data collection is to produce reliable data (Mouton, 1996). According to Mouton (1996, p. 111) "Reliability is synonymous with stability or consistency over time", which means that information obtained from an instrument, such as a questionnaire, is reliable if it does not vary as a result of characteristics of the instrument or measuring device itself (Neuman, 1997). Reliability is also a precondition for measurement validity (Neuman, 1997); therefore by maximizing the reliability of questions, the validity of survey measures can be increased. "The extent to which the answer given is a true measure and means what the researcher wants or expects it to mean is called validity" (Fowler, 1993, p. 80), which implies that validity requires the most accurate approximation of truth possible (Mouton, 1996). There are four types of measurement validity:

- *Face validity* is the most basic kind of validity (Neuman, 1997) and is concerned with the way the instrument appears to the respondent (Bless & Higson-Smith, 1995) and whether it answers all the research questions using the appropriate language and language level (Foxcroft, 2000). In

order to achieve face validity, questions were presented in a logical order and were formulated in a manner that could be easily understood by all respondents (Fowler, 1993). The questionnaire was then examined and a pilot test was implemented to contribute to the reliability and accountability of the research instrument by assessing the adequacy of the method and instrument of measurement (Neuman, 1997; Mouton, 1996; Bless & Higson-Smith, 1995).

- *Content validity* is a special type of face validity (Neuman, 1997) and addresses whether a questionnaire appropriately and thoroughly assesses the behaviour and knowledge it is intended to measure (Foxcroft, 2000). Content validity was achieved by referring to relevant literature (Bless & Higson-Smith, 1995) in order to compose an appropriate and comprehensive questionnaire.
- *Criterion validity* verifies the validity of a measure by comparing it to another measure that is known to be valid. As the current study is a first of its kind in Speech-Language Pathology, there are no comparable measures available. In order to apply criterion validity, the researcher may, therefore, be forced to wait for a future event against which to measure the instrument, due to the lack of valid, existing instruments (Bless & Higson-Smith, 1995).
- Finally, *construct validity* requires a definition with clear conceptual boundaries. It refers to the degree to which a construct or concept is actually measured, and requires the researcher to carefully follow the guidelines in the literature regarding question type, response format and construction (Foxcroft, 2000). In order to minimize threats to construct validity, it was ensured that the questionnaire contained items pertinent to the survey's objectives and attempts were made to avoid vague research questions, biased instruments, and leading questions (Neuman, 1997; Mouton, 1996).

2.4.6. *ETHICAL CONSIDERATIONS*

Ethical considerations are essential to every research attempt, especially when humans are involved (Foxcroft, 2000). Approval of appropriate ethical procedures in the current study was therefore obtained from the Research Ethics Committee of the Faculty of Humanities, University of Pretoria (see Appendix E). Respondents were also required to sign a letter of informed consent confirming their voluntary participation in the study (see Appendix B). Furthermore, efforts were made to ensure anonymity of respondents and confidentiality of data.

2.5. PILOT STUDY

All questionnaires can be improved through pretests and a pilot study (Moore, 2000). A pilot study was therefore conducted prior to the final distribution of the questionnaire for data collection. The pilot study served to highlight potential problems, which could then be amended, and to check the questionnaire in terms of its appropriateness, comprehensiveness, reliability and validity (Moore, 2000). Important issues to be addressed included whether the instructions and questions were clear, and whether the format of answering was easily understood (Fowler, 1993).

2.5.1. *AIM*

The purpose of the pilot study was to assess the content and structure of the questionnaire and to improve on these aspects by adapting the questionnaire where necessary in order to enhance the validity and reliability of the data collection instrument.

2.5.2. *SUBJECT*

It was decided to select a subject who had extensive theoretical knowledge, as well as practical experience in paediatric feeding disorders, in order to review the content of the questionnaire. The subject was also required to have experience in clinical research so that input could be provided concerning research requirements. The most appropriate subject who was selected was a university lecturer who offered theoretical and clinical expertise in feeding disorders, as she has a Masters degree and is trained in Neurodevelopmental Therapy.

2.5.3. *MATERIALS*

The main aim and objectives of the research study were provided together with the survey, in order for the subject to assess whether the content of the questionnaire correlated with the aims of the study.

2.5.4. *PROCEDURE*

The questionnaire together with the aim and objectives of the study and of the pilot study were delivered to the subject. The subject had a week to evaluate the questionnaire in terms of the content and structure of the questionnaire as well as the clarity and relevance of the items. The questionnaire was then returned, and feedback from the subject was obtained in written format, as well as telephonically.

2.5.5. *RESULTS OF THE PILOT STUDY*

The pilot study resulted in meaningful suggestions being made, which precipitated various changes to the questionnaire, namely:

- A list of definitions of particular words such as "nutritional deficiencies" and "failure to thrive" were provided to orientate the participants.
- Aspects related to nutrition and feeding disorders were incorporated in to the questions, e.g. dehydration, and non-oral management.
- Additional questions were included concerning the respondent's knowledge of "failure to thrive".
- The wording of some questions and response options was changed to reduce ambiguity and provide clarity.

The final questionnaire is provided in Appendix D.

2.6. PROCEDURES

The following procedures were employed in order to collect, record and analyze the data obtained.

2.6.1. *DATA COLLECTION*

- Therapists from all the hospitals and clinics within the selected geographical region were contacted in person and were asked whether they were involved in ECI and feeding therapy. Their willingness to participate in the research project was then confirmed, and their mailing details were obtained.
- A cover letter was attached to the questionnaire, which provided details on the aims and reasons for the research project and the estimated length of time it would take them to complete it. It was also requested in the cover letter that the respondents return the completed questionnaires by posting them in the self-addressed, stamped return envelopes, which would minimize the time and cost for the respondents.
- A letter of informed consent was also included with the questionnaire, which they were required to sign to confirm their voluntary participation in

the study. Participants were requested to return this letter with the completed questionnaire, and a copy would later be sent to them.

- Telephonic contact was made with the participants just before the questionnaires were mailed to inform them that the questionnaires were on their way.
- Questionnaires were then sent to each therapist via the mail.
- Approximately two weeks later, the respondents were contacted again to ensure that they had received and completed the questionnaire, and to remind them to please return the questionnaires in the post.
- When the questionnaires were returned, the letters of informed consent were detached from the questionnaire before coding of the questionnaires was done, in order to maintain anonymity.
- A copy of the signed informed consent form was then faxed back to the respondents, together with a final thank-you note for participating in the study.

2.6.2. *DATA RECORDING*

The receipt of the returned questionnaires was recorded by assigning a number, from 1 to 32, to the questionnaire. The questionnaires were then scanned to check that they had been adequately completed. The information obtained from the completed questionnaires was organized by means of a coding system whereby codes were assigned to all anticipated responses. For yes/no questions, a code 2 was assigned for a yes answer, while a code 1 represented a no answer. In the case of multiple answers to a question, a code was assigned to each possible answer, for example, codes one to five for each of five possible answers. The coded responses were then recorded by computer on an Excel spreadsheet, which listed the number of returned questionnaires in the left-hand column, and all the answer options as variables in the top row. In order to record the written responses to open questions, the answers were listed in columns in

order to determine patterns or prevalence of certain issues or opinions amongst the respondents. The responses were then coded and entered onto the computer Excel sheet.

2.6.3. *DATA ANALYSIS*

Questionnaires provide a fixed set of questions and systemically classified responses, which allows for quantitative comparisons to be made (Bailey, 1994). The statistical and analytical measurements were determined with the aid of a computer. The questionnaire responses to both open and closed-ended questions were computer coded and quantitatively analyzed using a form of descriptive statistics, namely the Statistical Analysis System (SAS). This system provided the frequency of responses to each question, as well as the percentage, cumulative frequency and cumulative percentage.

3. RESULTS AND DISCUSSION

A total of 32 respondents adequately completed and returned questionnaires, which were used as a data basis for the research project. The results of the study are described and discussed according to the identified sub-aims of the study and visual presentation of the results is provided to enhance the clarity of the discussion thereof. The number of respondents (N) varies for some questions as they were requested to complete only the response categories pertaining to them.

3.1 CONTACT WITH CLIENTS AT RISK FOR FEEDING DISORDERS AND NUTRITIONAL PROBLEMS

In section B of the questionnaire, respondents had to indicate how frequently they worked with clients with specified established and at-risk conditions; the percentage of their caseload that presents with feeding disorders and nutritional deficiencies; and what associated problems they find accompanying feeding disorders.

3.1.1 *CONTACT WITH HIGH-RISK POPULATIONS*

According to Rossetti (1996, p. 2), "anything that interferes with a child's ability to interact with the environment in a normal manner is a potential cause of or contributing factor to the presence of developmental and, more specifically, communication delay." All members of the EI team therefore need to be alert to the biological and environmental risk factors that may hinder normal interaction.

Table II provides an overview of the respondents' contact with high-risk infants.

Table II: High-Risk Populations seen by the Respondents

Risk conditions		Often	Some-times	Never	Uncertain	*(N)
Syndromes, e.g. Down Syndrome, Velocardiofacial Syndrome, Prader-Willi Syndrome		**38%**	62%	-	-	32
Acquired conditions and diseases, e.g.	Otitis Media	91%	9%	-	-	32
	Cardiac and Pulmonary diseases	28%	44%	16%	12%	32
	AIDS	47%	25%	12%	16%	32
Congenital anomalies, e.g. cleft lip and palate, cerebral palsy		**59%**	41%	-	-	32
Sensory anomalies, e.g. hearing loss, visual impairments		**69%**	31%	-	-	32
Anomalies associated with general developmental delay, e.g. metabolic disorders and Phenylketonuria		6%	75%	13%	6%	32
Perinatal anomalies that can lead to developmental delay, e.g. prematurity, low birth weight		72%	25%	-	3%	32
Intense or prolonged emotional trauma, e.g. abuse and neglect		13%	78%	9%	-	32
Socio-economic factors or psychosocial stressors, e.g. low educational level of parents, poverty, low socioeconomic status		78%	19%	3%	-	32
Conditions related to the primary caregiver that can influence the infant negatively, e.g. substance abuse, single parent, adolescent parent, and parental mental or physical illness.		53%	38%	6%	3%	32

***(N) = Number of Respondents**

□ - Risk conditions most commonly encountered
□ - Risk conditions least encountered, with the highest percentage of uncertainty
Bold – aspects highlighted elsewhere in discussion

Table II indicates that the 0-3 population, served by the respondents, exhibited a wide variety of risk conditions. In considering the disorders most commonly encountered, it is evident that *otitis media* is the most frequently seen disorder (91%). This finding correlates with those of Haasbroek (1999), who found acquired conditions and illnesses, such as otitis media, to be the second most commonly seen risk condition in the 0-3 population in her study. The high frequency of contact with children with this disorder may be due to otitis media being one of the most common diagnosed childhood illnesses, where the first peak age of occurrence is 6-36 months and at least one incident of otitis media

occurs in 75-95% of children before they reach school age (Louw, Hugo, Kritzinger & Pottas, 2002; Berkowitz, 1999). Furthermore, screening and identification of middle ear infections falls directly into the expertise of speech-language therapists and audiologists (ASHA, 1989), which leads to an alert awareness of, and exposure to this condition, and which may account for the high frequency of contact with this population. One of the predisposing factors to otitis media is the integrity of the individual's immune system (Martin, 1994), which is often impaired by malnutrition, resulting in frequent otitis, gastrointestinal and respiratory infections. Such infections in turn decrease appetite, despite the increase in nutritional requirements, which results in the maintenance and exacerbation of an infection-malnutrition cycle (Kessler, 1999) (see Figure 2). Feeding problems may ensue from otitis media due to the reluctance of an infant to feed from a bottle because increased pressure is experienced in the middle ear during sucking. Refusal to suck may be the first sign of an ear infection (Berkowitz, 1999). It has been estimated that recurrent infections, such as otitis media, contribute to more than 27% of paediatric undernutrition cases (Metallinos-Katsaras & Gorman, 1999). As respondents are frequently in contact with infants with otitis media, it is likely that they are also exposed to a population at risk for paediatric undernutrition, as well as feeding disorders, which require more encompassing services to treat the child holistically.

Infection frequently occurs in low-income countries, and it is commonly found that families of children with undernutrition are also economically at risk, as they live under conditions of poverty, low maternal education and inadequate employment (Metallinos-Katsaras & Gorman, 1999). *Socio-economic factors or psychosocial stressors*, such as low educational level of parents, poverty, and low socioeconomic status was found to be the second most commonly encountered risk factor in the current study (78%). This percentage differs from Haasbroek's findings (1999), which indicated that only 30% of respondents encountered

high-risk socio-economic factors. However, the majority of her respondents worked in private practice (57%), which is often not affordable or accessible to people from lower socio-economic brackets. In the current study, most of the respondents worked in state hospital settings (72%), where exposure to poor socio-economic factors is far more likely than in private practices. Lower socio-economic status may be the most powerful contributor to premature morbidity and mortality worldwide (Williams, 1998). In South Africa, the majority of the population lives in poverty and it is estimated that 80% of black children with disabilities live in extreme poverty with poor access to health care (Kritzinger, 2000). Although paediatric undernutrition occurs at all economic levels of society, poverty remains the greatest single risk factor for growth deficiency (Kessler, 1999), and it is estimated that Protein-Energy Malnutrition (PEM), which is the most prevalent form of malnutrition, affects up to 40% of children younger than 5 and living in low-income countries (Metallinos-Katsaras & Gorman, 1999). Poverty is therefore a major and uniform causal factor of malnutrition. Within the context of poverty, undernutrition coexists with many other factors, such as inadequate health care, poor-quality education, unemployment, large family size, unclean water and poor sanitation (Metallinos-Katsaras & Gorman, 1999), all of which are further psychosocial risk factors for nutritional and developmental disorders. It is found that young children living in poverty suffer from poor health and are at a greater risk for developmental, behavioural and educational delays, as seen by their frequently delayed language and cognition (Lequerica, 1997; Kaplan-Sanoff, Parker & Zuckerman, 1991). Respondents are therefore frequently in direct contact with populations living in poverty and at risk for developmental and nutritional problems.

Respondents indicated that, within their caseloads, perinatal complications such as *prematurity and low birth weight* occurred with the third highest frequency of 72%. This may be substantiated by the fact that 63% of the respondents indicated their involvement in hospital Neonatal Intensive Care Units (NICU),

where such perinatal conditions would be predominant (see Table I). Statistics for South Africa suggest that LBW has a high prevalence of 12% in the general population (Kritzinger, 2000). Contact with this population is likely to rise as survival rates for premature and LBW babies continue to improve with advances in neonatal medicine, technology and treatment (Rossetti, 1996).

Prematurity and LBW commonly places infants and children at risk for eating and swallowing disorders, which can cause malnutrition and dehydration that can affect the child's physical and cognitive growth and development (Siktberg & Bantz, 1999). Furthermore, there are many medical complications that accompany prematurity and LBW, which can compound the already existing feeding and nutritional problems. Respiratory problems are the single largest cause of death among these infants during the neonatal period. Infants may develop respiratory distress syndrome, which may require treatment that leads to substantial risk for Bronchopulmonary Dysplasia (BPD) (Rossetti, 1996). Infants with BPD require increased food intake as they expend extra energy in breathing (Berkowitz, 1999), and when severe, BPD is commonly associated with general growth failure (Rossetti, 1996). Necrotizing Enterocolitis (NEC) is another serious disorder primarily occurring in high-risk preterm infants and about 10% of infants less than 1,500 grams may be affected. NEC requires nasogastric tube feeding which may lead to behavioural feeding problems or food aversions (Hall, 2001; Rossetti, 1996). Speech-language therapists should be knowledgeable of the effects of these additional factors on a child's development and should be aware that malnutrition has been cited as a significant problem in newborn nurseries, particularly in premature babies and it is estimated that 5% to 10% of low birth weight infants may develop FTT (Lopez, 1997).

It is suggested that 75%-80% of ECI clients are at risk for developmental delay as a result of biological and environmental issues (Rossetti, 1996). These estimates are reflected in the current study's findings as the conditions most

frequently encountered, i.e. otitis media, socio-economic factors and perinatal anomalies like prematurity, are all categorized as at-risk factors. Only 15%-25% of clients requiring ECI present with established risk factors, where known patterns of developmental delay are expected, e.g. a child with Down syndrome (Rossetti, 1996). Established risk factors such as *congenital disorders* (cleft lip and palate; CP) and *sensory anomalies* (hearing and visual impairments) were seen quite frequently by the respondents at 59% and 69% respectively, which correlates with Haasbroek's (1999) findings. This common occurrence may be due to the high incidence of these disorders, as 1 out of 750 live births present with cleft lip or palate and the prevalence percentage of infants with cleft palates, causing swallowing and feeding difficulties in South Africa, is 0.1% (McLaren & Philpott, 1997). Children with CP are also reported to present at a rate of 0.8 per 1000 live births, which is ten times higher in South Africa than in developed countries (McLaren & Philpott, 1997). Furthermore, it is estimated that one out of 1000 babies is born with a severe hearing loss (Kritzinger, 2000; Haasbroek, 1999) and there is a 4-5.6% prevalence rate of childhood disability hearing disorders in South Africa (McLaren & Philpott, 1997).

In the case of a child with hearing loss, feeding difficulties may arise from the child's limited ability to express needs and wants (Prontnicki, 1995). Craniofacial anomalies and CP are both common risk factors for eating and swallowing disorders as the muscles and nerves essential for chewing, controlling and coordinating the swallow are affected (Siktberg & Bantz, 1999). Clinicians are required to be aware of the nutritional complications thereof, as the main factor in growth impairment is related to feeding and inadequate food intake (Berkowitz, 1999). Furthermore, otitis media is common among children with craniofacial anomalies, which can further impair their growth (Berkowitz, 1999).

Paediatric HIV/AIDS is one of the most common disorders to place children at risk for eating and swallowing disorders (Siktberg & Bantz, 1999). It is estimated that 14% of this population has significant feeding disorders (Prontnicki, 1995) and studies from South Africa have confirmed a high prevalence of FTT and malnutrition among infected children (Eley & Hussey, 1999). Although 47% of respondents reported seeing paediatric *HIV/AIDS* often, 12% reported never seeing HIV/AIDS, and 16% were uncertain (the highest percentage of uncertainty for all categories). A reason for the uncertainty surrounding this condition may be that the client's and the parent's HIV status is not always known. When considering the high frequency of contact with socio-economic factors such as poverty and low socio-economic status (78%), a higher occurrence of HIV/AIDS would be expected, as the HIV/AIDS pandemic is severely affecting the economically poor populations in South Africa (HIV/AIDS & STD Strategic Plan for South Africa 2000-2005, 2000). Although the true extent of the HIV/AIDS problem in South Africa is unknown, an estimate has been made that 40 000 HIV-infected infants were born in South Africa in 1995 (Eley & Hussey, 1999). As the HIV/AIDS pandemic in South Africa is one of the fastest growing epidemics in the world (HIV/AIDS & STD Strategic Plan for South Africa 2000-2005, 2000), it is reasoned that a much greater number of infants are contracting this illness currently. A total of 28% of respondents indicated that they either never saw the disorder or were uncertain, which suggests that approximately 1 out of every 4 respondents may be unaware or unable to identify the risk factors or signs of HIV/AIDS in the paediatric population, and would therefore possibly be less able to ensure adequate treatment. This finding has important clinical and training implications due to the seriousness of the problem and the need for prompt treatment.

It is interesting to note that the condition reported by the respondents as being least encountered (16% said never) was cardiac and pulmonary diseases. It is possible that the respondents are, in fact, exposed to these disorders more than

they indicated. Cardiac and pulmonary disorders often accompany other disorders, for example, disorders that are associated with congenital heart defects and growth problems include children with cleft lip and palate, children with Fetal Alcohol and Rubella syndrome, as well as with Trisomy 21 (Berkowitz, 1999; Shprintzen & Bardach, 1995). All respondents reported seeing children with syndromes such as Velocardiofacial syndrome and Down syndrome either often or sometimes. Velocardiofacial syndrome exhibits cardiac problems, while Down syndrome is often accompanied by cardiac, respiratory and pulmonary problems. Most respondents also reported encountering prematurity and LBW infants, who commonly have cardiac and respiratory or pulmonary problems as well, for example, BPD is found to develop in 15%-20% of neonates who are admitted to the NICU and require assisted ventilation.

There was also a high percentage of uncertainty (12%) among the respondents for the category of cardiac and pulmonary diseases, which may indicate a lack of awareness or non-familiarity with these disorders, particularly when they are associated with other disorders such as prematurity. Awareness of these disorders is important as they may affect growth, while congenital heart disease is often accompanied by growth impairment (Berkowitz, 1999) and studies have reported that up to 64% of hospitalized children with congenital heart disease have signs of chronic malnutrition. Cardiac and pulmonary problems lead to poor growth as a result of low oxygen levels in the blood, and increased energy requirements, and also result in the child tiring easily and not being able to feed adequately due to decreased endurance. Whenever breathing is compromised, feeding is affected (Berkowitz, 1999).

The results indicate that the respondents have contact with all the specified risk conditions for speech and language disorders, developmental delays as well as feeding disorders. Prevalence statistics for South Africa confirmed the respondents' frequent exposure to conditions such as otitis media, socio-

economic factors, and perinatal anomalies such as prematurity, which supports the assumption that respondents are aware of predominant, local risk factors. These risk factors are also risk factors for nutritional deficiencies, which suggests that the respondents may also be in contact with populations at risk for nutritional problems, although they do not seem to always be aware of this fact.

3.1.2 *CASELOAD OF FEEDING DISORDERS AND NUTRITIONAL PROBLEMS*

Children with developmental disabilities may have associated feeding and nutritional problems that range from mild to severe, depending on the child's severity of impairment (White, Mhango-Mkandawire & Rosenthal, 1995). Figure 3 depicts the percentage of paediatric clients with feeding disorders encountered by the respondents, as well as the percentage of those clients who also present with nutritional deficiencies.

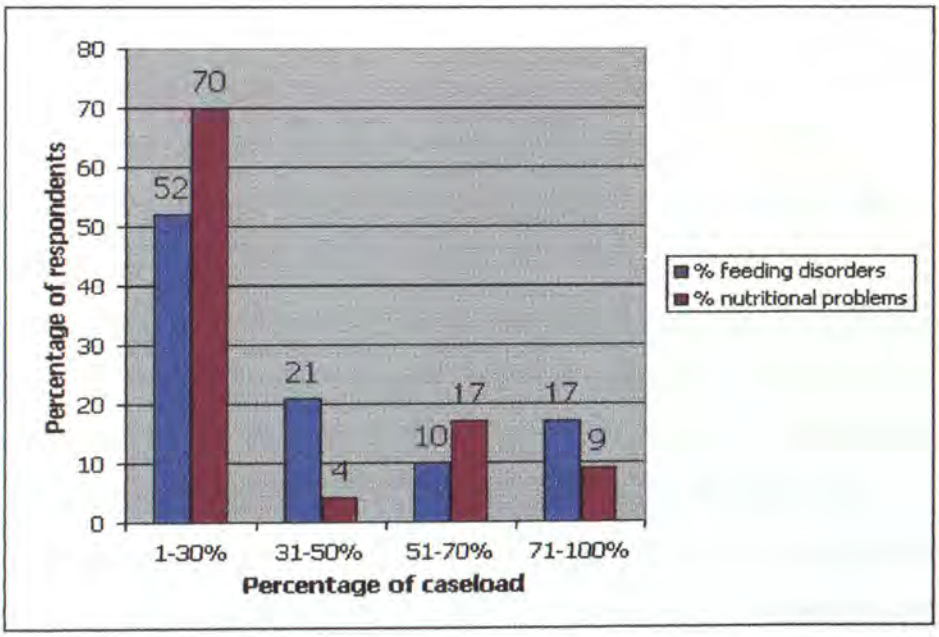


Figure 3: Caseload of Feeding Disorders and Nutritional Deficiencies

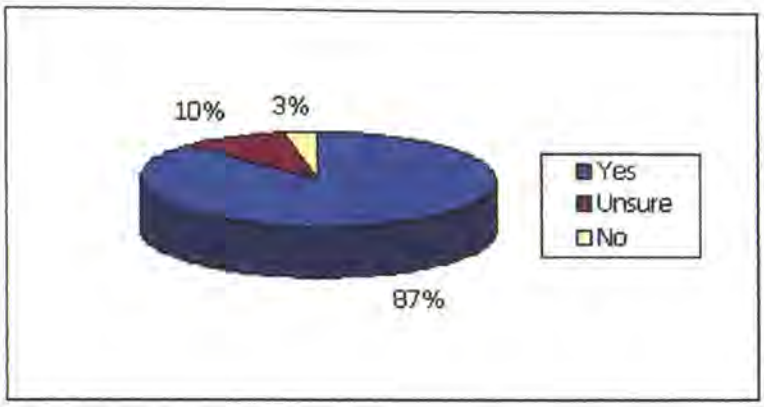


Figure 4: Presence of Nutritional Deficiencies within Feeding Disorder Caseload

All respondents reported having infants or children with feeding disorders within their caseload. The majority of respondents (52%) indicated that 1%-29% of their caseloads consist of clients with feeding disorders (Figure 3). The literature supports this finding as feeding problems are said to be very common during childhood, occurring in 25-35% of children (Black, Cureton & Berenson-Howard, 1999). Feeding and swallowing problems may cause dehydration and malnutrition, which may affect the child's physical and cognitive growth and development (Siktberg & Bantz, 1999). According to Chopra and Sanders (1997) childhood undernutrition poses as a serious public health problem in South Africa, as estimations suggest that 1.5 million children suffer from this debilitating condition. Upon investigating whether any of their clients with feeding disorders also presented with nutritional deficiencies such as malnutrition, FTT and dehydration, 87% of respondents responded affirmatively (see Figure 4). The majority of respondents therefore appear to be aware of accompanying nutritional problems. Furthermore, 70% of respondents indicated that 1%-29% of their clients with feeding disorders also presented with nutritional problems (see Figure 3). It should be noted, however, that the N-value for this particular question (question 7) decreased, and indicated that 28% of respondents failed to complete the question. Although 13% of respondents had indicated that they either never encountered nutritional problems or were

unsure, this leaves a further 15% who were aware of nutritional problems but were unable to indicate the frequency of occurrence. This may be an indication of uncertainty, lack of awareness or inability to fully recognize the disorder, which may jeopardize effective, holistic treatment provided by the respondents.

With advancements in health care technology, there are an increasing number of children with congenital and chronic disabilities surviving, and many of these children develop feeding and swallowing difficulties (Siktberg & Bantz, 1999), which may lead to nutritional problems. It is estimated that the prevalence of paediatric undernutrition or failure to thrive is between 5% and 10% in both rural and urban settings, and 1% to 5% of hospitalized young children are due to paediatric undernutrition, however, the number of undiagnosed children with this condition may be even higher as many are not identified or referred for help (Kessler, 1999; Raynor, Rudolf, Cooper, Marchant & Cottrell, 1999). Similar statistics are evident for delayed communication development (the most common symptom of developmental disability in children younger than 3), which also affects 5% to 10% of the paediatric population (Rossetti, 1996). Considering that the risk factors for developmental and communication problems, including biological and psychosocial or environmental risk factors (see Figure 1), are the same risk factors for feeding disorders and nutritional problems (Crais, 1999), and that the prevalence statistics are the same, it may be reasoned that the population at risk for communication disorders may often be the same population at risk for nutritional problems. As the results confirm that respondent caseloads do include clients with feeding disorders, and up to a third of these children present with additional nutritional deficiencies, it may be deduced that respondents are often in contact with a population at risk for nutritional problems, requiring early intervention.

3.1.3 *PROBLEMS ASSOCIATED WITH FEEDING DISORDERS*

Successful infant feeding may be disrupted by many disorders including gastrointestinal and respiratory disorders, central and peripheral nervous system damage, cardiac defects, structural abnormalities (Hall, 2001), while environmental and behavioural factors may also be associated with feeding disorders.

Table III displays the respondents' contact with clients who present with disorders that are commonly associated with feeding problems as well as nutritional deficiencies.

Table III: Problems Associated with Feeding Disorders

		Often	Sometimes	Never	Uncertain	*(N)
Anatomical abnormalities, e.g. cleft palate		23%	68%	6%	3%	31
Oral-motor delay/disorder		65%	32%	3%	-	31
Hypotonia/ hypertonia		68%	29%	3%	-	31
Oral defensiveness/ hypersensitivity		**42%**	35%	13%	10%	31
Dysphagia, i.e. swallowing difficulties		52%	42%	6%	-	31
Delayed feeding skills		58%	39%	3%	-	31
Behavioural feeding Problems	Food and texture aversion	**29%**	48%	10%	13%	31
	Disordered feeding interaction/ environmental/social problems	**13%**	58%	16%	13%	31
Limited food repertoire		55%	29%	3%	13%	31
Dehydration		29%	48%	16%	6%	31
Failure to thrive		**39%**	39%	13%	10%	31
Gastroesophageal reflux		36%	48%	10%	6%	31
Cardiac/pulmonary disorders		6%	61%	10%	23%	31
Reduced endurance, e.g. early fatigue during meals		**36%**	45%	13%	6%	31
Traumatically conditioned feeding phobia		-	42%	32%	26%	31

***(N) = Number of Respondents**

□ - **Associated problems most commonly encountered**
□ - **Associated problems least encountered, with the highest percentage of uncertainty**
Bold – aspects highlighted elsewhere in discussion

Children with *hypotonia/hypertonia* were most frequently encountered at 68%, and no uncertainty was evident regarding this disorder. A reason for this may be that children with hypotonia and hypertonia are easily recognizable due to the physical nature of the disorder. In Table II, respondents also reported a high frequency of occurrence of children with conditions such as prematurity and LBW (72%), congenital disorders such as CP (59%), and syndromes such as Down syndrome (38%), all of which display tonal problems. Furthermore, hypertonicity and hyperreflexia can occur from undernutrition, and children with growth deficiency are described as significantly more rigid or flaccid than control children (Rider & Bithoney, 1999). This implies that respondents may often be encountering the possible underlying condition of undernutrition.

Tonal problems would influence and accompany feeding disorders as muscle tone affects the child's ability to achieve a correct sitting position with a stable thorax and shoulder girdle, as well as adequate head control to facilitate an effective oral-motor-breathe-swallow pattern (Siktberg & Bantz, 1999; Sheppard, 1995). This is demonstrated by the fact that when a child has motor disabilities that affect the development of muscle tone, posture and movement, abnormal respiratory patterns may develop, which in turn affect feeding. For example, a child with hypotonia may compensate by hyperextension, which can lead to abnormal respiratory patterns (Hall, 2001). Children with hypertonicity may exhibit reflex hypersensitivity, leading to sensory defensiveness (Sheppard, 1995), while children with hypotonicity may have reduced reflex sensation (Siktberg & Bantz, 1999), which could hinder the feeding process.

Oral-motor delay/disorder (OMD) was reported by the respondents to be the second most common associated disorder, at 65%. As this disorder falls directly into the speech-language therapist's area of expertise (ASHA, 1989), it would be expected that there would be a high occurrence of this disorder. Many populations present with OMD, for example, children with CP mostly have

oromotor difficulties (Prontnicki, 1995). The high frequency of OMD would also go hand in hand with the high frequency of tonal problems as discussed above. Feeding problems may result from OMD, which can limit the variety of foods offered, leading to inadequate nutrient intake as well as prolonged mealtimes, therefore oral motor dysfunction can have a profound effect on growth and nutritional health (Faine, 1994). FTT and malnutrition may in fact present as symptoms in a child with a feeding and swallowing disorder (Siktberg & Bantz, 1999). Speech-language therapists need to be aware of the nutritional implications in order to provide appropriate treatment, referral and management for the feeding disorder, as well as the nutritional needs of young clients with OMD.

Respondents reported that *traumatically conditioned feeding phobia* was the least encountered condition (32% respondents said never), however, this disorder also displayed the highest frequency of uncertainty at 26%. According to Sheppard (1995), traumatically conditioned effects frequently co-occur with dysphagia and present as refusal of specific textures or types of food, restricted amount of food intake and rigid eating behaviours. Advances in medical technology have resulted in an increasing number of infants who survive, but who require enteral tube feeding to meet their nutritional needs, however, this often causes resistance to or even refusal of oral feeding or conditioned dysphagia, post-traumatic feeding disorder, or food aversion (Benoit, Wang & Zlotkin, 2000). Furthermore, children who have been tube fed may suffer the effects of deprivation of timely eating experiences (Sheppard, 1995), as will be discussed later. A feeding phobia may also result from unpleasant experiences with feeding, such as the painful sensation of gastroesophageal reflux, which is commonly found in children with neuromuscular coordination problems (e.g. cerebral palsy), and premature infants (Kedesdy & Budd, 1998). Both these disorders were reported to being encountered by the respondents in Table II, and Table III reveals that 84% of respondents encountered GER either

sometimes or often. Furthermore, confrontational or force-feeding may lead to the infant experiencing negative emotions of anxiety or distress, which can subsequently lead to avoidance of food (Black et al., 1999). Feeding phobias may delay introduction of oral feeding and complicate attempts to advance oral feeding, which can have significant economic, health and psychosocial consequences (Benoit et al., 2000; Sheppard, 1995), and therefore should be a factor to consider in providing treatment. However, the results suggest that in providing paediatric feeding therapy, respondents may not be fully aware of the causes or implications of a feeding phobia in EI, as more than half of respondents (58%) either never saw the disorder or were uncertain. This suggests a need for greater awareness of such factors that may be achieved through holistic training.

The respondents revealed their uncertainty with regard to cardiac/pulmonary disorders, which displayed the second highest frequency of uncertainty at 23%. This may be related to the findings in Table II, which presented cardiac and pulmonary diseases as the least encountered condition (16%), as well as the second highest frequency of uncertainty at 12%. There is a close relationship between the cardiac and respiratory systems, as increases in cardiac demands causes increased breathing requirements and the consequence of cardiac defects on respiration often leads to dysphagia (Hall, 2001). There are a number of paediatric cardiac anomalies, one of which is congenital heart disease (CHD). Infants with CHD are prone to malnutrition due to decreased food intake, malabsorption and increased energy requirements, however, inadequate caloric intake appears to be the most important cause of growth failure in CHD (Varan et al., 1999). Cardiac and pulmonary problems often result in the child tiring easily and not being able to feed adequately due to decreased endurance (Berkowitz, 1999). A high occurrence of reduced endurance, such as early fatigue during meals, was reported, as 81% of respondents indicated that they encounter this disorder either often or sometimes. This suggests that

respondents may be aware of the symptoms of these disorders, without realizing their possible source and are therefore unaware of the presence of cardiac and pulmonary disorders. This may hinder the respondents' ability to provide holistic and appropriate treatment, for example, conducting videofluoroscopic swallow study is particularly important for children with histories of cardiac and/or respiratory compromise, when assessing safety of swallowing prior to initiating treatment (Hall, 2001).

The results indicate that respondents are in contact with young populations at risk for speech and language disorders, developmental delays, as well as feeding disorders and nutritional deficiencies. All respondents reported being exposed to feeding disorders, and the majority was also aware of additional nutritional problems. Feeding problems may coexist or contribute to FTT, an established risk factor for developmental delay (Rossetti, 1996). This requires early identification and diagnosis of infants and children with feeding and swallowing problems in order to prevent nutritional deficits that may affect the child's physical, emotional, social, and cognitive development (Siktberg & Bantz, 1999).

3.2 EARLY INTERVENTION SERVICE DELIVERY FOR FEEDING DISORDERS AND NUTRITIONAL PROBLEMS

In section B of the questionnaire, under "Service Delivery", information was sought regarding assessment and treatment of clients with or at risk for feeding and nutritional problems. In terms of assessment, respondents were required to indicate assessment areas and factors related to nutritional status that they evaluated, as well as methods of assessment used. Treatment areas were then investigated and included treatment provided by the speech-language therapists and other team members.

3.2.1 *ASSESSMENT OF FEEDING AND NUTRITION*

In order to assess feeding problems, a multidisciplinary approach is often used, which includes assessment of the child's medical status, development, behaviour, feeding history, and relationship with the caregiver (Black et al., 1999). Table IV provides an overview of how frequently the respondents included specific areas in their assessment of clients with or at risk for feeding disorders and nutritional deficiencies.

The most frequently assessed aspects were found to be: positioning for feeding (97%); motor control (90%); physical incompetence, including OMD (84%) and structural features such as cleft palate (75%); sensory or neurological impairment (81%); and development, in terms of general development (75%) and feeding milestones (78%). All of these aspects relate directly to the traditional role and training of speech-language therapists in feeding therapy, which emphasizes the mechanical process of feeding and focuses on the physical nature thereof. Respondents are therefore appropriately assessing sensory and motor development of the child, which are important factors to be considered (Wooster, 2000). The issue most observed by respondents in assessing nutritional status, was found to be feeding time (75%). An awareness of the nutritional implications of this feeding difficulty is necessary as infants or children with physical incompetence, including aspects such as oral-motor, sensory or neurological impairment often experience prolonged feeding time (Siktberg & Bantz, 1999), which may impair their growth and development due to an inadequate intake of nutrients (Faine, 1994).

Table IV: Assessment Areas

Assessment areas		A	O	S	N	*(N)
Motor control, e.g. tone, reflexes, posture		90%	7%	3%	-	30
Positioning for feeding		97%	3%	-	-	32
Oral-motor/ cranial nerve evaluation, e.g. oral reflexes		72%	28%	-	-	32
Behaviour/state/sensory integration, e.g. stages of alertness & stress cues		65%	32%	3%	-	31
Respiratory function/endurance, including airway protection		58%	29%	13%	-	31
Physiological control, e.g. cardiopulmonary stability		26%	39%	16%	19%	31
Evaluation of communication		64%	26%	10%	-	31
Diet	Inadequate food, developmentally *inappropriate diet, food groups, consistencies and textures*	63%	31%	6%	-	32
	Duration of breastfeeding	53%	41%	6%	-	32
Physical incompetence	Oral-motor-disorder, neuromotor functioning, *gag reflex, dysphagia*	84%	16%	-	-	32
	Dysmorphic features, e.g. Cleft palate	75%	25%	-	-	32
Appetite	Grazing/meal spacing	40%	37%	23%	-	30
	Aversive conditioning (fear of eating; feeding phobia), supplemental feeding	28%	31%	35%	6%	32
Illness	Acute/chronic illness, medication	50%	41%	9%	-	32
	Medical restrictions on certain foods or diet *modification, e.g. thickening foods*	66%	22%	12%	-	32
Feeding interaction/ Management	Cue insensitivity, parent-child interaction	47%	31%	22%	-	32
	Distracting feeding environment	28%	31%	35%	6%	32
Child constitution	Difficult temperament, apathetic, tantrums	35%	34%	31%	-	32
	Sensory or neurological impairment	81%	19%	-	-	32
	Developmental delay	69%	31%	-	-	32
Caregiver competence	Maladaptive nutritional beliefs	39%	29%	32%	-	31
	Neglectful parenting	38%	28%	34%	-	32
	Parental mental illness	31%	16%	47%	6%	32
Systemic factors	Low socioeconomic status, poverty, hygiene	66%	22%	12%	-	32
	Family stressors	53%	31%	16%	-	32
	Multiple caregivers/feeders	59%	25%	16%	-	32
Feeding history and habits	Mealtime routines, feeding techniques, meal duration, amount of intake	78%	16%	6%	-	32
	Age of weaning	39%	42%	19%	-	31
Development	General development, growth	75%	22%	3%	-	32
	Feeding milestones, self feeding skills	78%	19%	3%	-	32
Specify other: Social development		3%	-	-	-	1
Factors noted in assessing nutritional status		**A**	**O**	**S**	**N**	
Thinness and loss of subcutaneous fat		66%	19%	9%	6%	32
Weight for height less than the 50th percentile		53%	19%	9%	19%	32
Frequent infections		59%	19%	13%	9%	32
Prolonged feeding time		75%	16%	6%	3%	32
Specify other: General appearance, health of skin and hair		13%6	-	-	-	4
: Bowel and bladder movements, state of urine and stools		%	-	-	-	2
: Frequent vomiting and hydration levels		3%	-	-	-	1
: Family socio-economic status		3%	-	-	-	1

(A= Always; O= Often; S= Sometimes; N= Never)
***(N) = Number of Respondents**

□- **Areas assessed most frequently**
□- **Areas least assessed**
□- **Areas assessed to a moderate degree**

Although respondents indicated their frequent assessment of general development and growth (75%), they evidently did not often consider weight for height in the assessment of nutritional status, as this showed the highest frequency of never being noted, at 19%. Although weight for height measurements are not conducted by speech-language therapists, they should take note of such anthropometrical information recorded in medical records, as this describes body proportionality, reveals caloric adequacy and can reflect long term status (Sherry, 1999). It is evident that the respondents focused on physical aspects during assessment, and were aware of the nutritional implications of prolonged feeding, however, they appeared to neglect areas not directly related to their traditional role, possibly due to a lack of information exchanged within a transdisciplinary team approach.

The aspect found to be least assessed was physiologic control, for example cardiopulmonary stability (only 26% of respondents indicated always assessing this, while 19% never included this in assessment). This finding may be related to the information contained in Tables II and III, which showed a low frequency of contact with clients with cardiopulmonary disorders, despite the fact that cardiorespiratory impairments may affect the swallowing process, leading to dysphagia (Siktberg & Bantz, 1999). As the respondents do not assess cardiopulmonary stability frequently, it may be that they are unaware of such disorders, and therefore they presume that their caseload does not present with such disorders when it may well.

Although respondents do assess feeding history and habits in terms of mealtime routines, feeding techniques, meal duration and amount of intake (78%), other aspects appear to be somewhat neglected by respondents, such as *grazing or meal spacing* (40%), which is directly related to mealtime routines and appetite. Mealtime scheduling is important to consider, as children who miss meals may become irritable due to a lack of nutrients, while children who are allowed to

snack during the day may not be hungry during mealtimes, which can be detrimental to the feeding process (Black et al., 1999). Children who graze eat less overall than those offered proper meals at correct times, thus contributing to decreased nutrition and possible difficult feeding behaviour (Kedesdy & Budd, 1998). Although *appetite* directly influences the child's desire to eat, which may affect the feeding process, it is not considered very often, and respondents rarely assessed *aversive conditioning/feeding phobia*. This latter finding may be related to the findings contained in Table III, which suggests that respondents did not frequently encounter traumatically conditioned feeding phobias as an associated problem to feeding disorders. Despite the finding that respondents are in contact with populations at risk for developing a feeding phobia (as discussed previously), they are not assessing this aspect (see Table IV), possibly due to a non-familiarity with the condition. This may result in a lack of awareness of the disorder, when it may well be present in certain clients, leading to a decreased ability to provide appropriate services.

Respondents indicated low scores for the assessment of *caregiver competence*, indicating another area that appears to be neglected. Although feeding milestones and self-feeding skills were frequently assessed at 78%, the literature suggests that whether a child develops and retains such eating competencies depend on parental behaviour (Satter, 1999). Inappropriate feeding practices may result from parent's lack of knowledge about their child's nutritional needs and feeding capabilities (Faine, 1994). FTT is more than a problem of eating difficulties and weight gain, as psychomotor development and maternal mental state are perhaps of even greater clinical importance (Raynor et al., 1999). One study reported a 70% rate of parental psychopathology at the time of referral of infants with NOFTT, which required counselling and support from health professionals (Wooster, 2000). As caregivers may benefit from therapeutic intervention that addresses their own mental health needs (Black et al., 1999),

assessment first needs to be conducted in order to identify such needs, which may necessitate referral to other team members, such as a clinical psychologist.

The field of communication pathology strongly emphasizes the importance of communication, specifically in development. It is therefore surprising that only 64% of respondents always assessed *communication*. Feeding is a highly social entity, and has a dual function of nutritional or physical and social development, as mealtime provides a unique opportunity for parent-child interaction, socializing, and engaging in conversation (Bryan & Pressman, 1995; Black et al., 1999). A significant concern during feeding, particularly with infants who have additional nutritional deficiencies such as NOFTT, is the infant's ability to express their needs, and the parent's ability to interpret and respond to the cues (Crais, 1999; Wooster, 2000). Cues regarding feeding and communication are often subtle and easily missed by parents, which leads to frustration, and a lack of reinforcement for the young child's communicative attempts, and the parent's competency (Wooster, 2000). With the focus on the physical, mechanical aspects of feeding, respondents may have lost sight of the social and communicative implications of feeding in young children.

The low frequency of inclusion of communication evaluation also corresponds with poorly assessed feeding interaction or management, as cue insensitivity and parent-child interaction was only always assessed by 47% of respondents, while only 28% of respondents always considered distracting feeding environments. During assessment, information should be gathered concerning the location of meals and competing activities during meals, as children may have difficulty focusing on the feeding process in the midst of environmental distractions (Black et al., 1999). In terms of child factors, sensory or neurological impairment was assessed very frequently (81%), but the temperament of the child, which affects communication and the feeding process, was hardly considered at 35%. As children at risk for feeding and nutritional problems, may also be at risk for

communication disorders, respondents are required to be aware of possible communication problems that may be interfering with feeding. Assessment of communication is therefore necessary.

The areas that respondents assessed approximately 50%-65% of the time included aspects such as *diet, illness*, and *systemic factors*. Systemic factors include the issue of *poverty*, which is directly related to malnutrition. It is surprising that poverty was not assessed more regularly, especially when considering the frequency with which respondents encountered poverty, as indicated in Table II, which corresponds to the high prevalence of poverty within South Africa. Poverty is directly related to quality and quantity of food that the child receives and the dietary quality of complementary foods is important in influencing infant growth patterns (Dewey, 1998b). The family may experience stress related to poverty, unemployment or other family stressors that leave them with little energy to address their child's nutritional needs (Black et al., 1999), while multiple caregivers or feeders may result in a lack of communication about the child's feeding routines and intake. Further stress may accumulate when prolonged hospitalization is necessary as in the case of premature infants, as this may increase their burden and sense of inadequacy as caregivers (Wooster, 2000). These areas should be assessed so that appropriate intervention may be conducted to relieve stressors as far as possible in order to enhance family and child outcomes.

In terms of *illness*, it was found that illness and medication were only assessed consistently by 50% of respondents. Furthermore, only 59% of respondents always took note of frequent illness in assessing nutritional status. According to Rider and Bithoney (1999) recurring respiratory and gastrointestinal illnesses, and otitis media occur more frequently in children with growth deficiency, which implies nutritional inadequacy. Both illness and medication can impair appetite and affect growth (Berkowitz, 1999) and even mild recurrent illnesses such as

otitis media can decrease a child's appetite (Rider & Bithoney, 1999). Children with disabilities commonly require daily use of medication for seizure disorders, cardiac function, respiratory diseases or bacteria infections (Faine, 1994). Medications, such as bronchodilators and diuretics may alter appetite, leading to decreased intake, while other side effects such as gastrointestinal symptoms of vomiting, diarrhoea and abdominal pain can also affect food intake (Berkowitz, 1999). "Optimal feeding practice can largely prevent or ameliorate the effect of infant illness" (Dewey, 1998b, p. 15). It is important to note that recurrent infections, such as otitis media, with which the respondents are often exposed may be related to an underlying condition, such as craniofacial anomalies, as well as immunodeficiency syndromes (Berkowitz, 1999) and an infant with FTT and recurrent infections may lead to concern about paediatric HIV/AIDS.

In terms of *diet*, it was found that only 63% of respondents always considered the adequacy and developmental appropriateness of the diet including food groups, consistencies and textures. The first year of life is critical to introduce a variety of food types (Pressman, 1995), however, medical and developmental problems in this period may disturb the orderly progression of feeding experiences including varieties of food types, utensils and body postures for eating (Sheppard, 1995). Children with HIV/AIDS often do not receive age-appropriate foods due to their frequent illness and developmental delay (Pressman, 1995) and prolonged feeding of soft foods to children with disabilities commonly occurs, which may be detrimental to oral health and limit the intake of essential nutrients (Faine, 1994). The effects of deprivation may include refusal to advance eating skills or difficulties with planning and organizing new feeding behaviours (Sheppard, 1995), as well as the possible development of oral defensiveness or hypersensitivity due to the lack of experience with a variety of foods (Pressman, 1995). Of the respondents, 77% reported oral hypersensitivity to occur either often or sometimes (see Table III), which may result in children resisting textured foods (Faine, 1994). Difficulty with foods of varying textures

may also be a sign of oral-motor problems (Black et al., 1999). Factors surrounding diet should be noted by team members during assessment, as this directly relates to the child's nutritional adequacy affecting growth and development, as well as development of appropriate feeding skills.

Of the respondents, 53% consistently reported to regard the *duration of breastfeeding* in their assessment. An association between breastfeeding and neurodevelopment in infants younger than 1 year has been found to exist, as studies have shown that mastery of specific milestones related to general and fine motor skills and early language development increase consistently with increasing duration of breastfeeding (Vestergaard, Obel, Henriksen, Søresen, Skajaa & Østergaard, 1999). There are particular benefits to breastfeeding in disadvantaged populations and in environments where sanitation is poor, as in much of the South African context served by the respondents. Breastfed infants often grow more rapidly than those fed with milk substitutes, partly due to avoidance of potentially contaminated fluids or foods (Dewey, 1998a; Dewey, 1998b). Breastfeeding also plays a vital role in aiding prevention of severe infectious morbidity in developing countries (Whitehead, 2000), and incidence of diarrhoea and otitis media are lower in breast-fed than in formula-fed infants, even in affluent populations (Dewey, 1998b). Universal breast-feeding is therefore advocated due to associated reductions in paediatric morbidity and mortality, however there is concern about the controversial issue of breast-feeding and HIV transmission. The risk of HIV transmission has been found to be greater than the protective effect of breast-milk as HIV infection may be postnatally transmitted to the infant from breast-milk (Hall, 2001; Eley & Hussey, 1999). Therefore breast-feeding is not recommended in such cases (Pressman, 1995), however, this presents a dilemma in impoverished populations where alternatives to breastfeeding may not be affordable or economical. Furthermore, breastfeeding may enhance the early mother-child relationship and influence the degree of stimulation received by the child (Vestergaard et al., 1999), while the

cuddling and touching of nipple-feeding helps develop attachment (Satter, 1999). Fostering positive attachment is important, as it has been found that there is a high rate of insecure attachment between children with feeding problems and their parents (Black et al., 1999).

In order to achieve primary prevention, respondents should be aware of the benefits of breastfeeding in order to relay such information to their clients. Knowledge is therefore required, such as the fact that it is recommended that breastfeeding continue exclusively for 4-6 months and partial breastfeeding throughout the second year of life (Whitehead, 2000). Furthermore, there should be an awareness of the factors that may hinder duration of breastfeeding, such as perinatal problems or illness of the infant (Vestergaard et al., 1999), which once again highlights the importance of assessing health and illness in the paediatric population.

A further aspect of concern related to breastfeeding, is the *age of weaning*, which was only always included in the feeding history and habits by 39% of respondents. For the first six months, breast milk provides adequate amounts of iron and zinc, which are critical for normal growth and development. Complementary foods are however essential from 4-6 months to supply nutritional requirements for these micronutrients (Krebs, 2000). Zinc deficiency may impair appetite and taste acuity, and can reduce food intake, leading to growth failure, which is a prominent feature of zinc deficiency (Gibson, 1998). Excessive milk consumption, as in prolonged bottle-feeding, is an important risk factor for iron deficiency anaemia, which has been linked to impaired performance in mental and motor development (Kwiatkowski et al., 1999). Therefore nutritional counselling and screening of at-risk groups are needed to eliminate this preventable disorder (Kwiatkowski et al., 1999).

Delayed weaning may be associated with malnutrition and feeding problems when solids are introduced (Black et al., 1999). However, solids introduced too early may lead to an increased vulnerability to developing allergies later in life, and may cause poor food acceptance, as well as disruption of mother-infant attachment. According to Satter (1999) when solids were introduced before 3-4 months of age, there may be significant and upsetting conflicts with infants over feeding. If solids are introduced in the early months, then the sucking reflex automatically pushes food out of the mouth. Children only become ready for solid foods at approximately 5-7 months when the extrusion reflex has been toned down. This is also a time when they are able to sit up, which enhances their ability to manage food in their mouth and to swallow safely (Satter, 1999). The introduction and choice of complementary foods is influenced by infant maturation, parental beliefs and perceptions and nutritional considerations (Krebs, 2000), all of which need to be considered in the feeding assessment.

3.2.2 *METHODS OF ASSESSMENT*

Table V presents the methods used by the respondents in assessing clients who have, or who are at risk for, feeding disorders and nutritional deficiencies.

The methods of assessment most commonly used by respondents included *oral-motor examination* (97%), *feeding or swallowing evaluation* (91%), *caregiver interview* (88%), *health and medical records* (84%), and *observation of mealtimes* (78%). These methods correlate once again with the most common areas of assessment as seen in Table IV, which reflect the traditional role of speech-language therapists. By administering such assessment methods, respondents should be gaining valuable insight into the mechanical and physical nature of paediatric feeding disorders.

Table V: Methods of Assessment

Assessment method	A	O	S	N	*(N)
In-depth case history	69%	25%	6%	-	32
Health and medical records	84%	13%	3%	-	32
Caregiver interview	88%	12%	-	-	32
Observation of mealtimes	78%	13%	9%	-	32
Food diary	43%	20%	13%	23%	30
Feeding or swallowing evaluation	91%	9%	-	-	32
Feeding skill and milestone scales	72%	16%	12%	-	32
Oral-motor examination	97%	3%	-	-	32
General developmental scales	56%	31%	10%	3%	32
Communication developmental scales	53%	35%	9%	3%	32
Family assessment scales	13%	16%	42%	29%	31
Informal/descriptive methods	66%	16%	15%	3%	32
Formal tests	6%	23%	45%	26%	31
Objective methods, e.g. videofluoroscopy	13%	23%	43%	20%	30

(A= Always; O= Often; S= Sometimes; N= Never)
***(N) = Number of Respondents**

- **Assessment methods most frequently used**
- **Assessment methods least used**
- **Assessment methods used to a moderation degree**

The assessment methods least used by the respondents included *family assessment scales* (29% said never), *formal tests* (26% said never), *objective methods*, such as videofluoroscopy (20% said never), and *food diaries* (23% said never). The infrequent use of *family assessment scales* correlates with the poor assessment of feeding interaction or management and caregiver competence, and the moderate assessment of systemic factors contained in Table IV. One study found that less than half of the medical charts for infants with NOFTT showed information about family composition, despite the fact that the cause of NOFTT is accepted to be psychosocial and environmental (Kedesdy & Budd, 1998). This suggests that respondents, as well as other health care professionals, may be unaware of the role of the family and environment in the onset, maintenance, and future success of paediatric feeding, which may imply that a family-centered approach is not being followed in spite of being advocated as the only viable approach to ECI (Guralnick, 1997).

A reason for the limited use of *formal tests* may be that respondents do not have access to such tests, and that there may be a lack of assessment tests that are appropriate for the South African context and culture. A respondent commented that objective measurements, such as videofluoroscopy, are not commonly used due to the lack of available equipment within the hospitals or institutions, In such a situation, the respondents may refer clients who require videofluoroscopy to an institution that does offer such services. Before initiating any treatment program, the safety of swallowing must be determined, which is usually achieved using videofluoroscopy (Hall, 2001).

Respondents indicated that they only used *general developmental* and *communication developmental scales* at 56% and 53% respectively. Although 75% of respondents reported to frequently assess development (Table IV), general developmental scales were always applied by only 56% of respondents, which suggests that respondents are possibly assessing development by more subjective ways such as observation. Communication, on the other hand, was not frequently assessed, as seen in Table IV, which corresponds to the occasional use of communication developmental scales. It therefore appears as if some respondents may be unaware of the importance of communication in the assessment and intervention of paediatric feeding, despite their primary function as communication interventionists, which confirms the findings.

Results indicate that respondents are assessing aspects of feeding disorders related to their traditional role and are mostly using appropriate methods. However, application of additional methods may be valuable in assessing and gaining insight into areas that may be somewhat neglected within the feeding context, such as communicative and family variables. Based on early, comprehensive assessment of feeding and swallowing and detection of a feeding impairment, an individualized feeding and swallowing management program should be created by the team (Siktberg & Bantz, 1999).

3.2.3 *TREATMENT FOR FEEDING DISORDERS AND NUTRITIONAL DEFICIENCIES*

Early identification and treatment is critical, and where nutrition is compromised, the goal of treatment is to avoid the occurrence of further complicating factors caused by inadequate nutrition in order to prevent long-term effects that may include physical, cognitive, and behavioural problems (Wooster, 2000).

Table VI displays the treatment areas included in the respondent's treatment of clients with feeding disorders and nutritional deficiencies, as well as the areas treated by other team members.

Table VI: Treatment Provided by Respondents and Other Team Members

Treatment areas	SLT Treatment				Treatment by other team members					
	A	O	S	N	A	O	S	N	*(N)	
Feeding therapy	77%	13%	10%	-	-	40%	47%	13%	30	15
Non-oral feeding management	45%	21%	27%	7%	39%	17%	28%	16%	29	18
Introduction of oral feeding skills, e.g. non-nutritive sucking and oral stimulation	73%	20%	7%	-	8%	25%	50%	17%	30	12
Oral-motor therapy	60%	27%	10%	3%	-	17%	50%	33%	30	12
Attain age-appropriate feeding skills	64%	33%	3%	-	10%	30%	30%	30%	30	10
Reduce oral aversions to feeding	55%	21%	21%	3%	-	33%	50%	17%	29	12
Transition from tube to oral feeding	48%	32%	7%	13%	8%	33%	42%	17%	31	12
Establish appropriate feeding schedule	24%	45%	21%	10%	27%	33%	27%	13%	29	15
Establish optimal infant state and position	71%	16%	13%	-	33%	42%	17%	8%	31	12
Environmental modification	27%	23%	43%	7%	27%	27%	40%	6%	30	15
Socio-emotional development	31%	14%	45%	10%	25%	31%	31%	13%	29	16
Maintain adequate nutrition and hydration	70%	17%	7%	6%	50%	38%	6%	6%	30	16
Expand food repertoire	38%	41%	11%	10%	36%	43%	14%	7%	29	14
Diet modification	37%	57%	6%	-	35%	41%	18%	6%	30	17
Early communication intervention	68%	22%	10%	-	-	-	73%	27%	31	11
Caregiver child interaction	55%	29%	16%	-	18%	27%	46%	9%	31	11
Caregiver education, counseling and training about feeding and nutrition	74%	16%	10%	-	25%	31%	38%	6%	31	16

(A= Always; O= Often; S= Sometimes; N= Never)
***(N) = Number of Respondents**

□- **Areas most frequently treated**
□- **Areas least treated**
□- **Areas treated to a moderate degree**

It should be noted that the N-value for treatment provided by other team members is very low, indicating that many of the respondents did not attempt to

fill this section in and the results will therefore have to be considered with caution, as they are not fully representative of the sample group and may not be a true reflection of the actual treatment being conducted by other team members. On average, only 14 out of 32 respondents actually responded to this question. This indicates a non-familiarity with the services provided by other team members, which may partially be due to professionals lacking the desired time to exchange information, leading to individual professionals remaining unaware of all that other team members have to offer (Bryan & Pressman, 1995). This implies that the respondents may not be functioning fully within a transdisciplinary team approach, and may in fact be quite isolated in their treatment of clients.

Table VII was created to demonstrate the relation between treatment and assessment areas frequently included by respondents, as well as the areas that may be lacking. The information is obtained from the highlighted aspects in Table IV (Assessment areas) and Table VI (Treatment areas).

The respondents indicated that three of the most frequently conducted treatment areas included *feeding therapy* (77%), *introduction of oral feeding skills* (73%), and *establishing optimal infant state and position* (71%). Once again, these areas are directly related to the traditional role of speech-language therapists, and correspond to the primary areas assessed by respondents, which focus on the physical nature of feeding. Intervention may often begin with correct positioning of the infant, as position and control of the trunk and head are important for the child to achieve an effective, safe oral-motor-breath-swallow pattern (Siktberg & Bantz, 1999) and proper positioning of the pelvis is vital for sufficient breath support during feeding and speech (Hall, 2001). Correct positioning also enables the child to maintain head support, and enhances the establishment of eye contact, which then encourages vocalization and

communication (Wooster, 2000), which once again demonstrates how effectively the feeding situation can be utilized for promoting communication development.

Table VII: Integration of Assessment and Treatment

Assessment areas from Table IV	Treatment areas from Table VI	
Motor control Positioning for feeding Physical incompetence Oral-motor/cranial nerve evaluation Sensory/neurological impairment	Feeding therapy Establish optimal infant state & position Introduction of oral feeding skills	Caregiver education, counseling, & training about feeding & nutrition
Cardiopulmonary stability	**Maintain adequate nutrition & hydration**	
Appetite e.g. grazing/meal spacing	Establish appropriate feeing schedule	
Age of weaning	Expand food repertoire	
Caregiver competence e.g. Maladaptive nutritional beliefs	Diet modification	
Feeding interaction e.g. Cue insensitivity		
Child temperament e.g. Passive		
Diet e.g. inadequate food		
Illness e.g. medication		
Systemic factors e.g. poverty		
Appetite e.g. feeding phobia	**Socio-emotional development**	
Feeding interaction e.g. distracting feeding environment	**Environmental modification**	
Caregiver competence e.g. neglectful parenting & parent mental illness	**ECI & caregiver-child interaction**	
Child temperament e.g. aggressive		
Communication		
Systemic factors e.g. family stressors & multiple caregivers		

- **Areas most frequently assessed and treated**
- **Areas least assessed and treated**
- **Areas assessed and treated to a moderate degree**

The results indicate that 70% of respondents frequently included the *maintenance of adequate nutrition and hydration* in their treatment. This is surprising as the data from Table IV, revealed that respondents did not often assess many of the factors related to nutrition, such as cardiopulmonary stability, appetite, age of weaning, caregiver competence, feeding interaction, difficult child temperament, as well as diet, illness and systemic factors. It is therefore questionable whether respondents would be able to holistically judge and treat the issue of adequate nutrition and hydration. In considering other treatment

areas related to nutrition in Table VI, it was found that respondents did not always include establishing an appropriate feeding schedule (24%), expanding food repertoire (38%), or diet modification (37%) into their treatment areas. A reason for this may be that respondents view these aspects as outside of their role and consider them the role of other team members, such as the dietician. However, a dietician may not always be present on the team, and respondents indicated that other team members hardly included these latter three areas in their treatment. The question may therefore be raised as to which professionals are considering and treating these aspects if they are being treated, and are the respondents aware of relevant areas being treated by other team members? Fortunately, it appears as if other team members do include nutrition and hydration within their treatment, as this was reported by the respondents to be the most frequently included treatment area by other team members at 50% (see Table VI). However, other team members may also be neglecting important issues relevant to the child's growth, development and feeding, which suggest that the child may not be receiving optimal treatment.

Further aspects that were reported to be treated infrequently by respondents include *environmental modification* and *socio-emotional development* at 27% and 31% respectively. These findings relate to those in Table IV, once again, which reveal that aspects relating to the environment, child and caregiver, as well as their interaction, were not frequently assessed. As focus on these aspects was lacking in assessment, it may be expected that these areas would be neglected during treatment as well. These aspects were also reported to being rarely included in treatment by other team members, again raising the concern that holistic treatment is not being offered. Impairment in any part of the physical process (traditional speech-language therapist's role), or the social interaction can cause dysphagia (Prontnicki, 1995), thus requiring alertness to social influences. Early identification of social and emotional problems is critical for improving developmental outcomes, as once such difficulties are established;

they remain stable over time and are highly resistant to change (Squires, 2000). Many children with feeding disorders experience socio-emotional difficulties, and research consistently shows associations between undernutrition and many psychosocial factors (Birch, 1999). Therefore, prevention and early intervention should support social-emotional competence, which may be accomplished through positive care giving responses and a supportive social environment, as these have been found to improve developmental outcomes significantly (Squires, 2000).

Environmental modification is also often necessary to address feeding and developmental concerns as the feeding environment should be positive, calm and supportive, with few distractions, in order for children to do well with eating (Satter, 1999; Wooster, 2000). Reducing environmental stressors may be achieved by providing a familiar feeder, as apposed to a number of feeders. Noise and distractions should also be reduced to create a communicative environment (Sheppard, 1995). There should also be consistency in mealtime routines and location (Wooster, 2000) as routines and predictable environments act as a stabilizing force for the child, while regular routines centered on biological rhythms promote better outcomes for the child. Furthermore, routines provide opportunities for social interaction between children and caregivers (Joos, Kitzman & Cole, 1999). It therefore appears as if respondents, and possibly other team members, may lack knowledge and awareness concerning the role these aspects play in the feeding process, and their importance in the ultimate development of the child.

Respondents only treated *ECI* and *caregiver-child interaction* to a moderate degree at 68% and 55% respectively, again corresponding to the infrequent assessment of communication, feeding interaction, caregiver competence and child temperament in Table IV. Communication and feeding have a transactional relationship with each other and it is found that undernourished children may

display behaviours, such as little eye contact, that may inhibit the development of good communication skills (Crais, 1999). One of the main principles of feeding therapy as well as nutritional intervention is to create positive interactions and enhance the caregiver's ability to be successful with their child (Smith, 1999; Crais, 1999). This demands a focus on the feeding relationship, including caregiver-child interaction and overall communicative attempts. Social interaction between caregiver and infant may minimize or maximize the effects of any prenatal or postnatal difficulties (Rossetti, 1996), suggesting the importance of enhancing interactive communication. Many of the biological and environmental factors that place children at risk for feeding disorders (as well as nutritional problems) also set them at risk for communication disorders (Crais, 1999). Furthermore, according to Rossetti (1996), the developmental domain of communication may be the most likely to be deficient for at-risk infants or toddlers. Therefore, communication intervention should always be a primary focus in treating young children with feeding disorders and nutritional problems, to prevent communication disorders and interactional problems. The lack of attention to communication implies that respondents may need to become more aware of the links between communication and feeding development, as well as their role as feeding, communication therapists.

Lastly, respondents reported frequent inclusion of *caregiver education, counselling and training about feeding and nutrition* within their treatment, at 74%. This is an important component in any intervention strategy in order to achieve optimum success as family education, instruction, and modeling is vital components of any comprehensive intervention program (Wooster, 2000). In considering Table VII it would seem logical that respondents would train caregivers in the areas in which they focused, highlighted by the red portion of the table. However, considering the apparent lack of awareness about many of the important issues relevant to optimal feeding practice displayed in the remainder of the table, it may be that caregivers are not receiving holistic

guidance encompassing all pertinent issues. For example, it has been found that infants with NOFTT demonstrate the greatest catch-up growth when intervention addresses family needs for psychological and social issues within a family-centered approach (Wooster, 2000), however, in order to identify possible problems in these areas, assessment of systemic factors, caregiver competence, including issues such as maternal depression, and social interaction needs to be conducted. As respondents did not regularly perform such assessments, it is questionable whether they could effectively address such issues in their treatment and caregiver training.

Due to the complex nature of feeding disorders, clients may present with problems that speech-language therapists are not able to directly treat. Information was therefore sought regarding the respondents' referral practice as demonstrated in Table VIII.

Table VIII: Conditions Pre-empting Referral Practice.

Client presents with:		
Health problems		94%
Developmental problems:	Growth retardation	78%
	Motor disorders	91%
	Cognitive disorders	72%
Behavioural problems		56%
Specify other: Dental anomalies		3%
Socio-emotional/economic factors		3%
Food adaptation & limited diet		3%

***(N) = Number of Respondents**
□- Conditions preempting referral most frequently
□- Conditions preempting referral least frequently

Table VIII indicates that respondents frequently referred clients with health problems (94%), which is possibly related to their frequent contact with clients with otitis media (see Table II), however, it is doubtful whether they are referring clients with conditions such as cardiopulmonary disorders, due to their apparent lack of awareness or assessment of such issues (see Table II, III and IV). This indicates a need for enhanced training and transdisciplinary teamwork.

According to Sheppard (1995), developmental and behavioural problems often co-occur with anatomic, neuromotor and medical problems in developmentally disabled children. Behaviour problems during mealtimes such as temper tantrums often arise, especially when caregivers are not sensitive to their infant's needs (Black et al., 1999). It is apparent from Table VIII that respondents did not regularly refer clients with behavioural problems (56%). This may be due to a low occurrence of behavioural feeding problems associated with feeding disorders, as suggested in Table III. However, Table IV indicates that assessment of behavioural issues such as parent-child interaction, caregiver competence and the child's temperament was limited, suggesting that respondents may be unaware of possible behavioural problems confounding the feeding process. Speech-language therapists should be alert to symptoms that suggest there may be a behavioural component of the feeding disorder, these include somnolence, physical avoidance, refusal of food, and rigid or restrictive eating routines or diet preferences (Sheppard, 1995). These may be noted during assessment of interactive behaviours or state or sensory integration, and may require referral to other professionals.

In conclusion, it was evident that respondents appropriately assessed and treated aspects related to their traditional role as feeding specialists. However, it appeared as if respondents did not gain a holistic view of the client as they neglected to assess important issues related to feeding such as the nutritional and psychosocial complications, which were then inadequately accounted for during treatment. Furthermore, respondents appeared to be unaware of their important role as communication interventionists in providing feeding therapy, again reflecting an incomplete perception of feeding disorders, requiring further training and transdisciplinary functioning.

3.3 ROLE OF SPEECH-LANGUAGE THERAPISTS IN FEEDING AND NUTRITIONAL INTERVENTION

According to Sheppard (1995), a paediatric dysphagia therapy program may enhance development in oral-pharyngeal and postural neuromotor competence, psychosocial and self-regulatory behaviours, and cognition, and should seek to improve nutrition, respiratory health, swallow and feeding coordination, and the behaviours associated with feeding.

In section D of the questionnaire, respondents had to indicate their opinion regarding the role that speech-language therapists should play in treating clients who present with feeding disorders and nutritional deficiencies. The results provided in Table IX reflect their views in response to Question 23 of the questionnaire.

Table IX: Perceptions Regarding the Role of Speech-Language Therapists.

The speech-language therapist has a role to play in:	A	O	S	N	*(N)
Fulfilling the role of "feeding specialist"	69%	28%	3%	-	32
Performing a detailed assessment on the feeding process, including oral-motor assessment	94%	4%	3%	-	32
Performing a detailed communication assessment, including caregiver-child interaction	**91%**	9%	-	-	32
Describing both the rate of development and the pattern of disordered feeding	72%	28%	-	-	32
Identifying developmental risk factors in order to refer clients to other professionals	**75%**	25%	-	-	32
Identifying nutritional problems, e.g. FTT; dehydration	**50%**	38%	12%	-	32
Incorporating nutritional intervention into treatment goals	**63%**	34%	3%	-	32
Provision of parent-centered intervention	**97%**	3%	-	-	32
Provision of appropriate direct therapy to clients	91%	9%	-	-	32
Team collaboration	**94%**	6%	-	-	32

(A=Always; O=Often; S=Sometimes; N=Never)
***(N) = Number of Respondents**

□- areas mostly considered to form part of speech-language therapists' role
□- areas least considered to form part of speech-language therapists' role
Bold: areas otherwise highlighted in text

The results indicate that the respondents generally agreed that most of the suppositions formed part of the role of speech-language therapists. Once again the areas with the highest scores related to the traditional role of speech-language therapists, as highlighted in red.

Respondents regarded detailed assessment of *communication* and *caregiver-child interaction* (91%) as a very important part of their role. Theoretically this may be explained by the fact that these two facets are delicately entwined and fall directly into the field of speech-language therapy expertise which strives to prevent or ameliorate communication disorders on a primary, secondary and tertiary level (ASHA, 1989). High quality feeding interactions during the first years of life are linked positively to a child's subsequent cognitive and linguistic competence and to more secure attachments to major caregivers (Satter, 1999). Speech-language therapists should therefore evaluate and treat communication impairments coinciding with, and contributing to feeding problems (Kedesdy & Budd, 1998), as they are required to conduct a communicative diagnosis separate from or part of a larger diagnostic effort (Louw, 1997). However, previous findings (see Tables IV to VII) of the current study revealed a lack of attention to these areas in the context of feeding therapy, as indicated by the failure of respondents to consistently assess communication and feeding interaction, infrequent use of communication developmental scales, and only moderate inclusion of communication intervention and caregiver-child interaction within treatment. It therefore appears as if respondents are aware of their role as communication interventionists in general, but they may not have linked this vital function to their role in the early intervention of feeding disorders. This lack of insight may be due to an unawareness of the significance of communication and caregiver-child interaction within a feeding context specifically, and the significant effects of the early feeding relationship on nutrition and later development, including emotional, cognitive and language development.

Of the respondents, 97% considered *parent-centered intervention* as an important part in the role of speech-language therapists. This is positive, as parent or caregiver centered intervention is a fundamental principle of EI (Guralnick, 1997) and allows caregivers to become more knowledgeable and skillful, which empowers them to appropriately care for and facilitate the development of their children more effectively (Rossetti, 1996). However, it is suggested that the parent centered intervention being provided by respondents possibly needs to encompass a more holistic focus in order to incorporate aspects pertinent to the child, parents and environment that effect the feeding process and nutrition, as described in Table VII.

Although speech-language therapists are not qualified to directly assess or treat medical and nutritional issues, they may play an important role in the remediation of psychosocial issues, which are associated with most instances of decreased caloric intake (Rider & Bithoney, 1999). It is also part of their professional role and functions to provide advice and support prospective parents who seek counselling and referral services to other team members. In order to refer appropriately, however, identification of nutritional problems must be incorporated into their role. As feeding disorders are often accompanied by nutritional problems, leading to growth deficiencies, respondents may not have realized that their role in treating feeding disorders may be extended. The management of growth deficiencies should address as many contributing feasible factors as possible, as even partial solutions may improve a child's growth, for example, nutritional counselling and improving parent-child interaction may contribute despite the presence of other unresolved problems (Rider & Bithoney, 1999).

From Table IX it is evident that only 50% of respondents always considered the *identification of nutritional problems* as part of their role, whilst only 63% were of the opinion that *incorporating nutritional intervention into treatment* always

plays a significant role in treating clients with feeding and possible nutritional problems. According to Prontnicki (1995, p. 2), symptoms of dysphagia include "any difficulty with swallowing that interferes with its safe and comfortable resolution or; overall, with *nourishment* of the individual or control of oral secretions." Identification of nutritional problems such as FTT is critical in intervention, as children under 2 with such a condition may never recover from the detrimental effects of undernutrition on the developing central nervous system (Wooster, 1999). Nutrition services are therefore a vital component of comprehensive care for children with special health needs, specifically children with feeding and swallowing problems (Arvedson & Brodsky, 2002). A management program should not only include improving swallowing, advancing the child to more mature eating behaviours, and managing oral secretions; but should aim to improve nutritional intake as well (Sheppard, 1995). The realization that feeding disorders often lead to further nutritional and physical problems demands that nutritional and physical aspects be included in the comprehensive services planned and provided by health care workers, including speech-language therapists.

Respondents appeared to be well aware of the importance of *team collaboration* as 94% always considered this as part of their role. However, team collaboration implies that team members should be able to identify clients with additional at-risk or established risk factors that necessitate referral and intervention by other team members. Having said this, it is noted in Table IX that apart from the poor regard for identifying nutritional problems (50%), only 75% of respondents always considered identifying developmental risk factors in order to refer to other team members, as part of their role. Children with feeding disorders commonly present with developmental delays and disorders as well as nutritional problems that then further hinder their development, and this therefore requires all respondents and speech-language therapists to be actively involved in identifying

such risk factors that can hinder a child's growth and development and may even have long lasting or permanent consequences.

Team members may encounter problems that they are unable to solve wholly within their own area of expertise, which requires them to exchange information and work in conjunction with one another. As members of well functioning teams generate referrals from their own area of proficiency to other members (Bryan & Pressman, 1995) it would seem logical to say that for effective team functioning, team members should be aware of the roles of the other team members in order to refer and collaborate appropriately. The more knowledge team members have regarding each other's potential contribution, the more supportive team members can be to each other and the more comprehensive the treatment plan can be (Sampson, 1999) within a transdisciplinary approach. According to Louw (1997) speech-language therapists are required to have knowledge of the roles, skills and functions of other professional disciplines involved with infants, toddlers and their families, as well as customary treatments provided by related professionals. In considering the results contained in Table VI it was found that fewer than half of respondents gave an indication of which treatment areas were provided by other team members. This poor response rate may be due to their non-familiarity with the role of their team members, which implies that the team collaboration may not be functioning as effectively as it should be, in order to provide comprehensive and holistic services.

In *conclusion*, it was found that respondents felt strongly about including important aspects related to their traditional role as feeding therapists. However, their traditional role of communication therapists may not be fully realized within the feeding context, whilst issues such as identifying and intervening in clients with nutritional problems may be somewhat neglected, even though such issues are directly related to feeding and are of the utmost importance for successful intervention outcomes.

3.4 TEAM APPROACH TO FEEDING AND NUTRITIONAL INTERVENTION

Section C of the questionnaire determined the respondents' participation in a team approach to early intervention with clients with feeding disorders and nutritional deficiencies. The information gathered included whether the respondents followed a team approach, the nature of team collaboration and the ease with which a team network amongst professionals was established, as well as which other professionals they collaborated with as team members.

3.4.1 *PARTICIPATION IN A TEAM APPROACH*

According to Louw (1997) speech-language therapists require specialized skills and competencies to provide effective services, and these include participating effectively as a member of a multi- or transdisciplinary team. Paediatric undernutrition is a particularly difficult field requiring effective team intervention, which includes specific expertise from different professionals and support among the team members (Sampson, 1999). Figure 5 demonstrates the percentage of respondents who reported to be functioning within a team approach.

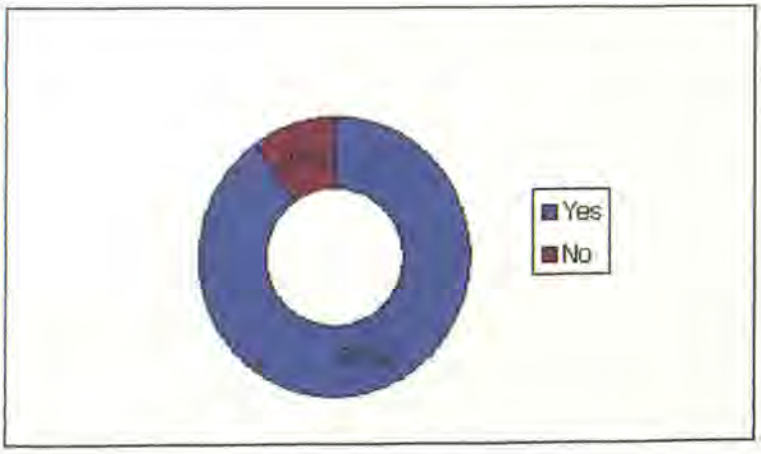


Figure 5: Participation in a Team Approach

Interventions for childhood feeding disorders often utilize professional expertise from various disciplines working individually, in consultation with each other, or on teams (Kedesdy & Budd, 1998). The results indicate that 90% of respondents were involved in a team approach during early intervention services, which corresponds with Haasbroek (1999) who found that 93% of respondents provided ECI within a team approach. This is a positive finding as a team approach is effective and essential to address the multitude of varied etiologically significant factors related to feeding difficulties (Wooster, 2000).

3.4.2 *NATURE OF TEAM COLLABORATION*

There are three apparent approaches to teamwork. Multidisciplinary collaboration refers to a group of individuals from a variety of disciplines, who cooperate but are discipline specific and function independently. Interdisciplinary collaboration is defined as the disciplines that work in coordination but separately providing a comprehensive array of services as they make their individual assessments, but develop a service plan jointly, whilst transdisciplinary collaboration is defined as the crossing of traditional disciplinary boundaries by team members, while working through one agent and focusing on the family as team members (Rider & Bithoney, 1999; Khan, 1999). Figure 6 and 7 illustrate the nature of team collaboration and the ease of developing a team approach, as reported by respondents.

The results displayed in Figure 6 show that the majority of respondents (70%) participate in a multidisciplinary team approach during intervention with clients with feeding disorders and possible nutritional deficiencies. This is a parallel model of service delivery whereby professionals tend to work in a discipline driven manner with little exchange of information, interaction or overlap among disciplines during assessment and treatment (Rossetti, 1996). This may result in each discipline having a limited view of the role or function of other team

members, which appears to be the case in the current study, as more than half of the respondents failed to report on the treatment provided by other team members in Table VI, suggesting non-familiarity due to services possibly being conducted separately.

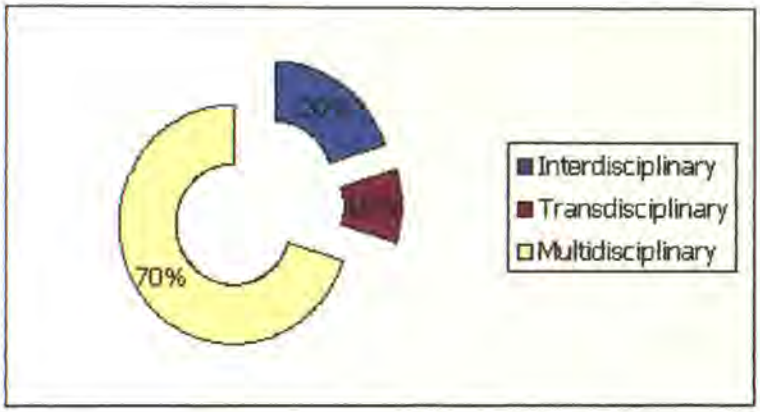


Figure 6: Nature of Team Collaboration

Another characteristic of the multidisciplinary approach, is that the family is generally not considered to be an integral part of the intervention provided, as all activities are highly child-centered, with little involvement of the family (Rossetti, 1996). This finding directly contrasts with the results presented in Table IX, and X, which suggest that 97% of respondents always considered parent-centered therapy as part of the speech-language therapists' role, and 91% of respondents always collaborated with parents or caregivers. The discrepancy may be explained by the possibility that, although definitions were provided in the questionnaire, respondents may not have been familiar with the specific terminology of team approaches, and what each approach encompasses. It therefore appears as if respondents are functioning in a multidisciplinary approach with other professional team members, due to a possible lack of cohesion among group members. However, respondents recognized the importance of including parents and families in intervention, and have embraced elements of a transdisciplinary approach when working with caregivers.

Only 20% of respondents reported functioning within an interdisciplinary team approach. This moves towards more ideal cohesion among group members as, although assessment is still conducted in a discipline-specific manner, the group meets thereafter to exchange information and plan treatment recommendations together (Rossetti, 1996). Very few respondents (10%) indicated their involvement in a transdisciplinary team approach. The limited application of this model by respondents may be due to this approach being relatively new, resulting in an unawareness thereof by respondents and other team members, who may therefore require training and time to adapt to the new model.

According to Rossetti (1996), a holistic view of health care, research in infant development and the early intervention movement has given rise to the transdisciplinary approach within the last ten years, which is a highly successful model representing the future of early intervention. This model is characterized by exchanging information, skills, and knowledge among disciplines, crossing disciplinary boundaries by means of role release and expansion, and including the family as an integral part of the process in order to achieve integrated, cross-disciplinary intervention. The implementation of this latter approach may particularly be needed in the South African context, as posts are being eliminated due to budget cuts and competing pressure for positions from other specializations (Pickering et al., 1998). Therefore not all disciplines may be represented on every health care team providing services for children with feeding disorders, while families and medical aids may not be able to afford the spectrum of services required.

Although a multidisciplinary team has been found to achieve better results than single disciplinary primary care in treating children with FTT (Kedesdy & Budd, 1998), a transdisciplinary approach may enhance outcomes even further as such an approach to early detection of nutritional deficiencies and nutritional

intervention may prevent serious long-term complications of undernutrition (Winter & Oleske, 1999).

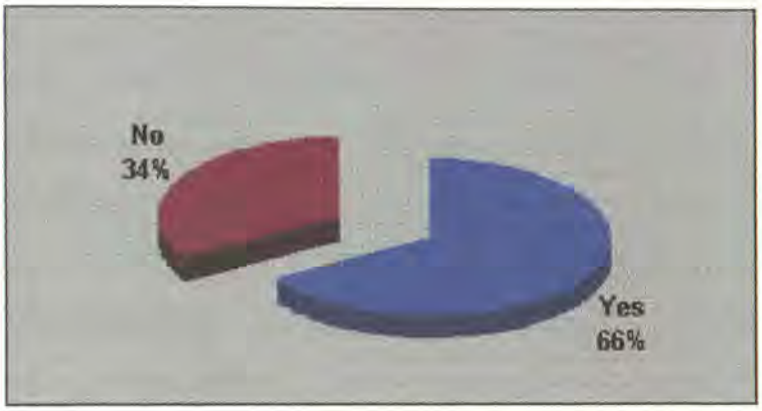


Figure 7: Ease of Developing a Team Approach

Figure 7 demonstrates that most respondents (66%) confirmed that it was easy to develop a network among professionals in providing a team approach to feeding disorders. Some respondents stated that it was not necessary for them to pioneer a team approach, as a strong network among professionals within a team approach already existed within their work context. This may have contributed to their perception that a team approach was easily developed.

However, 34% of the respondents claimed that it was not easy to develop or establish an effective team approach. Reasons for restricted team functioning were cited, such as that other professionals had little knowledge about EI and feeding intervention, and that it was sometimes difficult to convince other professionals of the role of speech-language therapists, resulting in difficulty getting medical and nursing staff to refer clients with paediatric dysphagia. Comments also revealed that teams were unsuccessful due to a lack of experience and a tendency to work in isolation. Further indications of multidisciplinary functioning were evident as some respondents suggested that professionals did not always see the need to function collaboratively and were

unwilling to share their knowledge and information. This may be related to the finding illustrated in Figure 6, revealing that most respondents participated in a multidisciplinary team approach with little interaction among professional team members.

In order for a team to be successful, individuals should be willing to cooperate and develop interrelationships (Bryan & Pressman, 1995). It is therefore suggested that there is a need for professionals to understand the expertise brought by other disciplines in order to generate a coordinated approach to intervention of feeding problems (Kedesdy & Budd, 1998). At the same time highly qualified professionals need to stop guarding the boundaries of their professions in order to usher in effective transdisciplinary functioning. In this way professional expertise may be complimented by a transdisciplinary approach to rehabilitation (Uys & Hugo, 1997).

3.4.3 *MEMBERS INVOLVED IN THE TEAM*

Due to the complexity of feeding disorders and the fact that dysphagia symptoms commonly cross the traditional boundaries between professional disciplines (Bryan & Pressman, 1995), expertise is required from many different professionals in order to provide holistic and appropriate intervention. Table X displays the collaborative team functioning with other team members as reported by the respondents.

Respondents indicated that the team members most frequently collaborated with were parents or caregivers (91%), which relates to the findings in Table V, VI and IX. The involvement of caregivers and families is positive, as children's feeding behaviours and development is influenced by direct interaction with family members (Crais, 1999). All team members must develop a trusting, respectful relationship with caregivers, characterized by open communication

that recognizes the importance of family and caregiver input (Wooster, 2000) and encourages them to voice their concerns about the infant's feeding, while participating in problem solving. This will maximize the likelihood that they will be motivated and able to comply with the feeding therapy program (Sheppard, 1995). Parents of infants who display disorders such as FTT, often perceive themselves as less competent, and it is found that improved growth outcomes may be related to parental perceptions of high competency and high child adaptability (Lopez, 1997). Parental involvement enhances parenting and nurturing skills and decreases their feelings of failure with their child (Rider & Bithoney, 1999). In considering the complex nature of psychosocial factors surrounding feeding disorders, the role of the caregivers and family must be emphasized.

Table X: Collaborative Functioning with Other Team Members

TEAM MEMBERS	A	O	S	N	*(N)
Paediatrician	47%	34%	16%	3%	32
Primary care physician	30%	30%	30%	10%	30
Neurologist	20%	13%	47%	20%	30
Gastroenterologist	7%	14%	43%	37%	28
Pulmonologist	8%	-	22%	70%	27
Radiologist	14%	24%	38%	24%	29
ENT	23%	29%	35%	13%	31
Dietician	44%	28%	25%	3%	32
Nurse	58%	36%	6%	-	31
Physiotherapist	55%	32%	10%	3%	31
Occupational Therapist	40%	34%	23%	3%	30
Psychologist	11%	10%	48%	31%	29
Social Worker	17%	14%	62%	7%	29
Teachers of special school	10%	17%	38%	35%	29
Speech- language therapist	67%	23%	10%	-	30
Parents/Caregivers	91%	6%	3%	-	32
Daycare caregivers	48%	16%	29%	6%	31
Specify other: Cardiologist	3%				1
Paediatric surgeon	3%				1
Music therapist	3%				1
Dental professionals	6%				2

(A = Always; O = Often; S = Sometimes; N = Never)
***(N) = Number of Respondents**

□- **Highest frequency of collaboration with professionals**
□- **Less frequent collaboration with professionals**

Respondents revealed that team members who were rarely involved in collaboration include pulmonologists and cardiologists. These results may, however, relate to the findings in Tables II and III, which revealed that respondents seldom encountered cardiac and pulmonary diseases in their general caseload of high-risk populations, or as an associated problem with feeding disorders. It may be true that the lack of collaboration with pulmonologists and cardiologists is due to a low incidence of the appropriate disorders reported by the respondents. However, according to Bryan and Pressman (1995), pulmonologists, who manage airway hyperactivity, respiratory distress and acute or chronic respiratory failure, often refer children for a dysphagia assessment in order to determine whether respiratory symptoms are feeding related. The argument may also be raised once again that respondents did not assess cardiopulmonary stability, as seen in Table IV. This may have led to a lack of awareness to the presence of such disorders, especially considering that many of the populations the respondents encounter regularly (see Table II), are populations who frequently present with additional cardiac-pulmonary disorders, such as premature babies. Additional training may therefore be required to address possible cardiopulmonary disorders.

While feeding disorders may have associated organic aetiological factors, requiring the attention of medical team members, the majority of feeding and nutritional problems have psychosocial factors debilitating the feeding process, such as poverty and dysfunctional feeding interactions. Professionals from various psychosocial areas of rehabilitation are involved with these children (Bryan & Pressman, 1995), however, respondents reported poor collaboration with professionals such as psychologists and social workers. These professionals may be needed to address common unspoken issues such as family crises (Bryan & Pressman, 1995) or even issues such as neglect, abuse, maternal depression as well as housing and food program services. Psychologists may evaluate the parent-child interaction and may determine the presence of psychopathology or

adjustment problems with the aim of designing behavioural feeding protocols, improving parent-child interactions and reducing stress surrounding feeding issues. Social workers contribute by evaluating family relationships and resources, home feeding environment and community resources in order to intervene appropriately (Kedesdy & Budd, 1998). Again the lack of collaboration with these professionals may be related to the findings in Tables IV and VI, which revealed that respondents infrequently assessed or treated psychosocial factors. Although respondents are not qualified to do in-depth assessment and treatment of such issues, these aspects should still be considered in order to gain an accurate perception of the dynamics influencing the feeding process. This would allow for effective intervention, appropriate referrals and collaboration with psychologists and social workers.

It is surprising to note that only 44% of the respondents reported consistent collaboration with *dieticians*, as 70% of respondents indicated that 1-29% of their clients with feeding disorders also presented with nutritional problems (see Figure 3). Furthermore, results from Table IX revealed that many of the respondents did not always consider it the role of speech-language therapists to identify nutritional problems or incorporate nutritional intervention into treatment goals. These findings suggest that respondents may be aware of accompanying nutritional problems but may not be ensuring adequate treatment or necessary referral, even though the primary purpose of feeding therapy such as for dysphagia is to ensure adequate nutrition and hydration (Hall, 2001).

A registered dietician should be included in the team to evaluate a child's nutritional status and adequacy of their diet, calculate caloric intakes, adequacy of vitamins, trace elements, minerals and fluids, formula adjustments, recommending supplements, meal planning and monitoring overall nutritional status (Wooster, 2000; Bryan & Pressman, 1995). A dietician can also assess whether micronutrients are sufficient in children requiring long-term medications

(Arvedson & Brodsky, 2002) and may be involved in assessing parent's knowledge of nutrition and family dietary practices which may highlight the need to counsel parents in ways to modify their child's eating habits (Kedesdy & Budd, 1998; Bryan & Pressman, 1995). A dietician should therefore be consulted whenever there are concerns about nutritional adequacy (Arvedson & Brodsky, 2002) as failure to improve the child's nutritional status may result in long-term developmental consequences (Wooster, 1999). It should be noted that there may be an overlap in professional functions between nurses and dieticians, as *nurses* may also be involved in functions such as monitoring growth and providing adequate nutrition (Lopez, 1997). Nurses also remain in more contact with the client and their family throughout hospitalization and may play an important role in providing information surrounding feeding problems, as in the case of children with cleft-lip and palate (Louw & Botha, 1999). Results indicated that respondents collaborated with nurses more often than dieticians (58%), which may suggest that collaboration concerning nutrition may be occurring with nurses rather than dieticians.

The results indicate that respondents are involved in teamwork, particularly with caregivers. According to Kedesdy and Budd (1998) the professions most frequently involved in the diagnosis and treatment of feeding problems are medicine, nursing, nutrition, speech-language therapy, occupational therapy, physical therapy, psychology and social work, however, results indicate that collaboration may be limited with many of these professionals who should be involved in intervention. Team functioning may therefore require enhancement through more consistent collaboration with other team members who may provide valuable insight into the child's condition. Furthermore, a comment made by one respondent highlighted the fact that health care services are experiencing severe budget cuts and are therefore restricting extended team therapy sessions causing paramedical services to be stretched to their limits, which confirms the opinion expressed by Pickering et al. (1998). When professional resources are

limited, single professions may provide many functions (Kedesdy & Budd, 1998). This is an indication that transdisciplinary action is required more than ever, where professionals transcend each other's boundaries to ensure adequate and holistic services to those in need (Uys & Hugo, 1997).

3.5 TRAINING, THEORETICAL KNOWLEDGE AND PRACTICAL SKILLS

In section D of the questionnaire, respondents were required to indicate their clinical and theoretical training in feeding disorders, and whether this training included aspects of nutrition. Furthermore, respondents reported on their opinion of their theoretical knowledge and practical skills regarding aspects of feeding and nutrition intervention.

3.5.1 *TRAINING IN FEEDING THERAPY*

Figure 8 presents the respondents' exposure to clinical and theoretical training in feeding therapy and nutritional aspects.

According to Figure 8, it appears that although 66% of respondents received undergraduate theoretical training in paediatric feeding therapy, only 47% of respondents received clinical training therein. When these results are compared to those of Haasbroek (1999), who found that a large percentage of respondents received undergraduate clinical and theoretical training in ECI (85% and 72% respectively), a discrepancy is evident and may imply that training in ECI may not be incorporating the field of paediatric feeding disorders. Furthermore, only 21% of respondents reported receiving instruction concerning nutritional aspects at an undergraduate level, suggesting a need for enhanced undergraduate training in feeding therapy that encapsulates a more holistic approach to the disorder. Figure 8 also reveals that few respondents (19%) had completed

postgraduate degrees that included a paediatric feeding therapy component, possibly in the form of a module. The training appeared to be theoretical rather than clinically based, and only 6% of respondents reported that the training included aspects of nutrition.

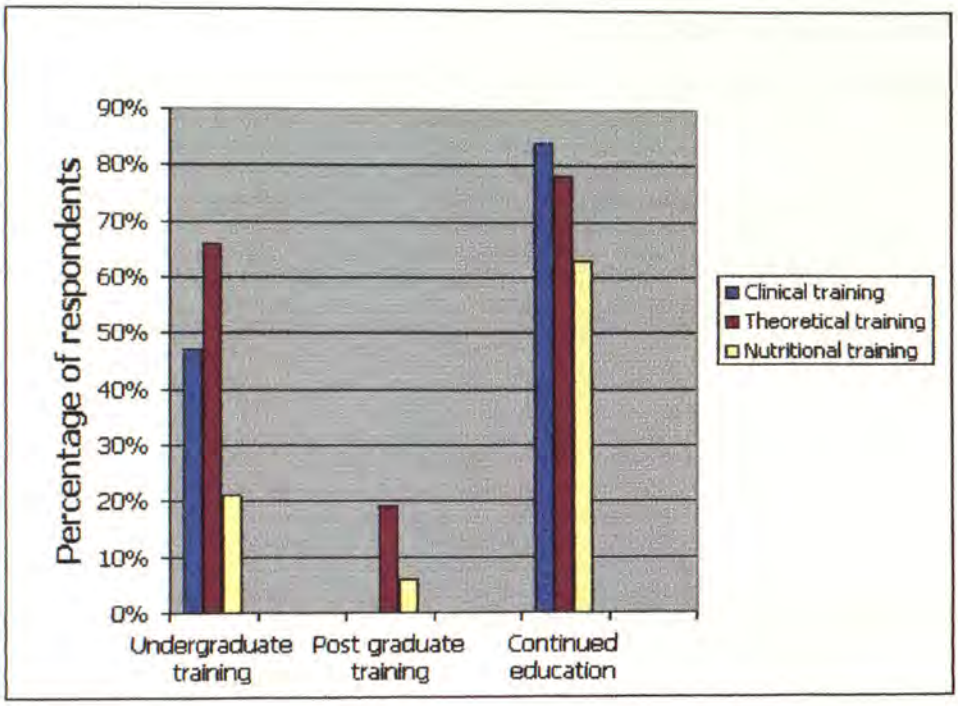


Figure 8: Training in Feeding and Nutritional Intervention

Respondents furthermore reported that their training in paediatric feeding disorders occurred mostly during continued education, in the form of courses and seminars. Of the respondents, 84% stated that they received clinical training, whilst 78% gained theoretical training within this context, demonstrating a positive balance between clinical and theoretical instruction. Furthermore, continued education appears to have provided a more holistic view of feeding disorders as 63% of respondents reported the inclusion of nutritional aspects. A reason for the provision of more eclectic instruction may be due to health professions adopting the new transdisciplinary focus that encourages the provision of diverse training to multiple professions fostering an understanding of

each other, for example the Clinic for High Risk Babies seminar in September of 2001 (Department of Communication Pathology Annual Report, 2001), which focused on feeding, but targeted different disciplines in EI. It is positive that so many respondents reported attending such courses and seminars, as continued education is essential to keep abreast with technological advances, and to review and update knowledge and skills (Khan, 1999). These findings suggest that respondents are aware of the necessity to update and review their knowledge.

It is evident that undergraduate training in paediatric feeding therapy is restricted and insufficient. This needs to be addressed on a national level in order to adequately train feeding therapists holistically, emphasizing the complexities of this disorder.

3.5.2 *EXPERIENCE*

The respondents' years of experience in early communication intervention and/or feeding therapy is displayed in Figure 9.

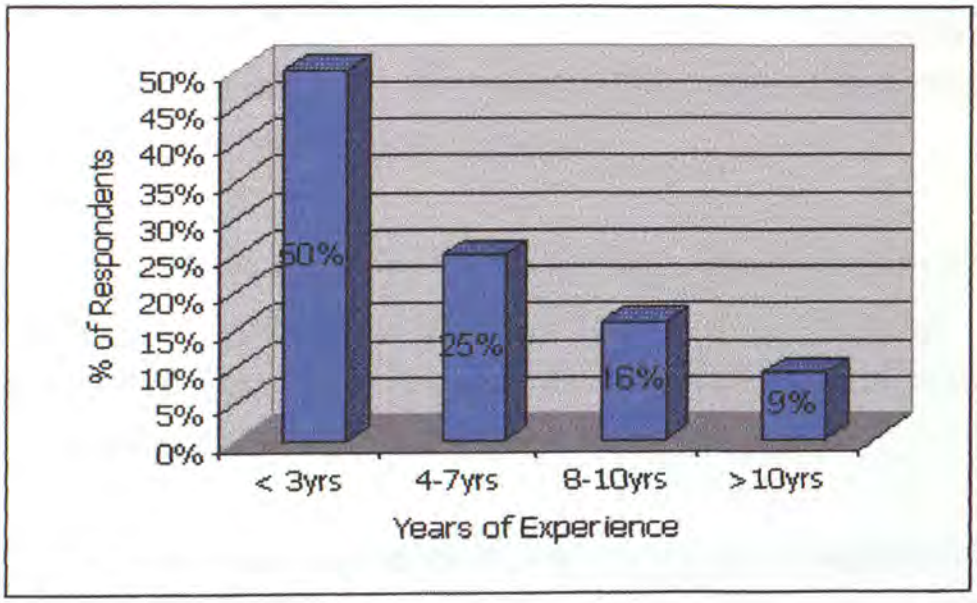


Figure 9: Respondents' Years of Experience

Experience provides a practical context in which learning and training is continually enhanced. Figure 9 indicates that the majority of respondents (50%) had 3 or less than 3 years of experience in this field, whilst a very small percentage of respondents (9%) had provided this service for more than 10 years. As was concluded from Table I (see 2.3.3.) the majority of respondents were new graduates with less than three years of experience. The respondents would therefore not initially have the advantage of experience to further equip them with the knowledge or skills in providing services to clients with feeding and nutritional problems in EI. This confirms that training is once again required at the undergraduate level to adequately prepare new graduates for the task of early feeding intervention as they enter the work context.

3.5.3 *THEORETICAL KNOWLEDGE AND PRACTICAL SKILLS*

Clinical assessment and treatment of speech, language, voice and hearing should be based on sound theoretical underpinnings (Khan, 1999), which then requires appropriate application in the clinical setting. Educational training and work experience may influence the respondents' perceptions of their clinical competence. Information was therefore sought regarding the respondents' opinion about their theoretical knowledge and practical skills during feeding and nutritional intervention, as displayed in Table XI.

Table XI reveals that the respondents generally were of the opinion that their theoretical knowledge and practical skills were "good", which implies that respondents felt competent in many aspects of their service delivery. This could be due to experience as well as training and continued education.

The areas that respondents reported to feel most competent in appeared to be the identification of developmental risk factors (38% and 24% respectively); and team collaboration (38% and 32% respectively) as they indicated that their

knowledge and skills were excellent with regard to these. This sense of competence corresponds to the respondents' strong perception that these areas are part of the professional functions of speech-language therapists (see Table IX).

Table XI: Respondents' Opinion about their Theoretical Knowledge and Practical Skills

Aspects	Knowledge				Skills				*(N)	
	Exc	Good	Av	Poor	Exc	Good	Av	Poor		
Screening	16%	62%	22%	-	16%	60%	24%	-	32	25
Identification of developmental risk factors	38%	50%	12%	-	24%	56%	20%	-	32	25
Identification of malnutrition and FTT	3%	60%	28%	9%	4%	44%	52%	-	32	25
Evaluation of feeding process	13%	62%	25%	-	8%	72%	20%	-	32	25
Evaluation of caregiver-child interaction during feeding	19%	53%	28%	-	12%	72%	16%	-	32	25
Evaluation of communication during feeding	22%	62%	16%	-	20%	64%	16%	-	32	25
Interpretation of evaluation results	12%	69%	16%	3%	8%	68%	20%	4%	32	25
Feeding therapy	19%	47%	34%	-	8%	52%	40%	-	32	25
Nutritional intervention	-	31%	41%	28%	-	24%	40%	36%	32	25
Caregiver education and counselling about nutritional issues	6%	44%	28%	22%	4%	44%	28%	24%	32	25
Team collaboration	38%	47%	9%	6%	32%	44%	16%	8%	32	25

(Exc. = Excellent; Av. = Average)
***(N) = Number of Respondents**

□- Areas of highest competence
□- Areas of lowest competence

Although malnutrition and FTT are established risk factors for development, results suggest that respondents did not view their competence in this regard as highly as when identifying developmental risk factors. Most respondents reported that their knowledge in identifying malnutrition and FTT was good (60% of respondents), however, in terms of practical skills, the majority of respondents rated themselves as average (52% of respondents). The latter finding may be related to findings from Table IX, which demonstrated that respondents did not

consider the identification of nutritional problems, such as FTT, as part of their professional function, which may have impeded their practical skills therein. Furthermore, when relating the respondents' perceived knowledge to previous findings in Table IV, which illustrated that respondents did not take note of many important factors in assessing nutritional status, it may be that respondents perceived their knowledge to be better than it was. This implies that respondents may require additional training in terms of identifying malnutrition and FTT as developmental risk factors. In the case of FTT it is essential that team members have expertise in developmental, medical, nutritional, and psychosocial issues as the emphasis should be on the identification and intervention for children with FTT as soon as possible – under 2 years – in order to improve their overall outcomes (Wooster, 2000).

In terms of team collaboration, it would be expected that most of the respondents would have a sound theoretical background therein, considering that a focus on, and training in, team work has developed within the last decade, and most of the respondents graduated within the last ten years (see Table I). Although respondents appeared to be satisfied with their collaborative competence, attention may once again be drawn to the finding that the majority of respondents were functioning within a multidisciplinary team rather than within the more effective transdisciplinary approach (see Figure 6). Of the respondents, 53% graduated between year 1998 and year 2000 (see Table 1), which suggests that they should possess the theoretical background to the transdisciplinary approach, however, their skill level in implementing such an approach may be less competent due to factors mentioned earlier (see 3.4.2).

In terms of nutritional intervention, a high percentage (28%) of respondents reported poor knowledge while 36% viewed their skills as poor. Furthermore, their knowledge and skills regarding caregiver education and counselling about nutritional issues was rated as poor by 22% and 24% of respondents

respectively. This latter finding is disturbing as many respondents (74%) reported always including caregiver education, counselling and training about feeding and nutrition within their treatment (see Table VI), which raises the question of their competency to effectively provide such training with restricted knowledge and skills.

The limited knowledge and skills regarding nutritional aspects may be attributed to the limited undergraduate training in such issues; whilst very few respondents were exposed to nutritional issues during their postgraduate studies (see Figure 8). Many respondents did, however, report gaining training in nutritional aspects during continued education, which suggests one of two things when considering their lack of apparent knowledge and skills. Either that the training in nutritional issues during continued training was inadequate to meet their needs, or the respondents did not benefit optimally from adequate training due to their perception that identifying nutritional problems and incorporating nutritional intervention into treatment goals was not part of their role (see Table IX). Once again, such perceptions may originate from undergraduate training possibly failing to provide an eclectic approach to feeding disorders by highlighting relevant nutritional issues. Lack of knowledge and skills with regard to nutrition may also confirm findings presented in Table X, which revealed that collaboration with dieticians did not often occur and a transdisciplinary approach was not fully established, whereby learning through exchanging information would have taken place.

In terms of theoretical knowledge, speech-language therapists should have knowledge within all areas of development including physical, neuromotor, social, emotional and cognitive, in order to provide purposeful and effective early intervention (Louw, 1997; Rossetti, 1996). Nutrition, or the lack thereof, may evidently affect all of the above-mentioned areas, which demands awareness and knowledge of influencing factors. The respondents' view on the importance

of speech-language therapists possessing knowledge relating feeding therapy, nutrition and ECI was therefore investigated, and is presented in Table XII.

Table XII: Importance of Specific Knowledge for Speech-Language Therapists:

	Yes	No	*(N)
The relationship between feeding disorders and nutritional deficiencies	100	-	32
Risk and causal factors for nutritional deficiencies	100	-	32
Symptoms and signs of nutritional deficiencies	100	-	32
Complications and consequences of nutritional deficiencies on a child's development and growth	100	-	32
Consequences of nutritional deficiencies on a child's cognitive and communication development	100	-	32
Treatment/therapy options for nutritional needs	100	-	32

***(N) = Number of Respondents**

Table XII reveals that all respondents (100%) felt that it was important for speech-language therapists to have knowledge on various factors relating nutritional deficiencies to feeding disorders and early communication. Such positive affirmation reflects openness by respondents to gain knowledge of areas outside of their traditional role, thereby embracing a more transdisciplinary approach. It also confirms that they are aware of the importance of having a thorough knowledge base and are eager to expand on their theoretical training, as seen by the fact that many of them engage in continued education (see Figure 8).

The results highlighted the need for holistic service delivery within the paediatric feeding context, which may only be achieved through more comprehensive training and transdisciplinary functioning.

4. CONCLUSIONS: IMPLICATIONS FOR CLINICAL PRACTICE AND FURTHER RESEARCH

In accordance with the main aim of the study, the experiences and perceptions of speech-language therapists regarding nutritional issues in children requiring feeding intervention and/or ECI, was successfully explored. Based on the results from each of the study's objectives, the following **conclusions** were drawn.

Results revealed that the respondents are in ***contact*** with paediatric clients who have, or may be at risk for, feeding disorders and nutritional deficiencies. Upon investigation of the ***nature of EI services*** to this population, it was found that respondents competently assessed and treated aspects of feeding disorders that related to their traditional role in feeding therapy, which tends to focus on the mechanical nature and process of feeding (ASHA, 1989). Issues related to the *psychosocial dynamics* of feeding were, however, neglected in assessment and treatment, such as caregiver competence, child temperament, parent-child interaction and systemic factors. This may be due to a lack of awareness of the significance of such issues within the feeding situation. Furthermore, findings revealed that respondents acknowledged their role as *communication* interventionists in general. However, in considering their limited focus on communication within assessment and treatment of clients with paediatric feeding disorders, it becomes apparent that respondents had not recognized the importance of their role as communication interventionists within the feeding context.

Findings also suggested that the respondents were under the impression that they were ensuring adequate *nutrition* and hydration within treatment, however, their limited consideration of factors influencing, and related to, nutrition during assessment, implied differently. A reason for the respondents' lack of adequate attention to nutrition may be related to their view that identifying nutritional

problems such as FTT and incorporating nutritional intervention into treatment goals, does not form part of their ***professional function or role***. The findings may be an indication that respondents lack insight into the complexity of feeding and nutrition and were possibly unaware of the relation between nutrition, feeding, communication and development, which may be attributed to limited training.

Although a transdisciplinary ***team approach*** to EI has been found to be most effective (Louw, 1997; ASHA, 1989), respondents reported a limited application thereof. Rather, respondents were found to be involved in a multidisciplinary team approach, implying limited interaction and exchange of information among professionals. Therefore, there appears to be a delay among professionals in keeping in stride with advancements in transdisciplinary functioning within health care.

Findings indicated that respondents regarded *parents and family* as important team members, however, respondents' training of caregivers may have been somewhat restricted by their limited insight into psychosocial and nutritional aspects related to feeding. The respondents' lack of nutritional knowledge highlights the need for interaction and collaboration with *dieticians* in particular. Such collaboration does not, however, appear to be regularly occurring. This requires effort from both disciplines to collaborate and provide more holistic services for clients with feeding disorders, whilst further training in the transdisciplinary approach may be needed.

The majority of the respondents gained their theoretical and clinical ***training*** through continued education, which included a nutritional focus, thus indicating a positive move towards viewing feeding disorders holistically. Respondents reported that although undergraduate training provided a fair amount of theoretical instruction in feeding disorders, nutritional aspects were scarcely

incorporated therein, which may imply a discipline-specific manner of training with little transdisciplinary flexibility. This reveals a need to include further undergraduate training in feeding disorders within a holistic approach that encompasses the important and relevant issues of nutrition as well.

The respondents' perceptions of their ***theoretical knowledge*** and ***practical skills*** suggested that although they felt competent in many areas of service delivery, there is a general need for knowledge and skills regarding nutritional intervention, and caregiver education and counselling about nutritional issues. This need may be due to the finding that their undergraduate training provided limited instruction in nutritional aspects. Respondents were, however, eager to expand their knowledge base regarding nutrition, feeding and communication, indicating a willingness to engage in role expansion, thus embracing more of a transdisciplinary approach.

A **critical evaluation** of the study was conducted in order to reflect on the value and limitations of the results. Due to the complex nature of feeding disorders, and the lack of similar studies conducted in South Africa, information was required to gain a holistic view of service delivery within this context. This lead to the compilation of a comprehensive, but fairly long and complex questionnaire, which may have posed as a limitation to the study (Mouton, 2001; Moore, 2000). However, in order to encourage respondents to be cooperative, efforts were made to ensure that the questionnaire was well structured and "user-friendly", which contributed to the correct and appropriate completion of most of the questions (Leedy & Ormrod, 2001). In analyzing the questionnaire, it was found that the more complex and longer questions were not always answered completely, for example, the question on treatment provided by other team members, as well as the question on the respondents' perceptions of their knowledge and skills. Incomplete responses lead to ambiguous interpretation, as respondents may not have answered due to the complexity of the question, or

due to their own lack of knowledge regarding the question (Fowler, 1993). To avoid incomplete responses due to complex questions, care needs to be taken to simplify the question's response format and provide more specific and clear wording in the questions. Although closed-ended questions were mostly used in the questionnaire in order to save time, it was found that the inclusion of open-ended questions was valuable as the additional comments made by respondents provided further insight and understanding (Bailey, 1994).

A further limitation of the study was that only 49 questionnaires were sent out within the restricted regions of Pretoria and Johannesburg, due to time and financial constraints. Although a high response rate of 65% was achieved by means of persistent contact with respondents (Leedy & Ormrod, 2001), the sample size remained small at only 32 respondents. The data was therefore very sample and context specific, presenting a limitation to the study (Mouton, 2001). The results can therefore not be generalized to the South African context as the number of respondents and geographical area covered was limited and not all speech-language therapists involved in ECI and feeding therapy were included from all parts of South Africa, rendering the data as non-representative of the population (Leedy & Ormrod, 2001). Future research may seek to achieve more extensive and representative sample groups.

In spite of the mentioned limitations, the questionnaire was comprehensive and encapsulated the broad spectrum of factors relating to feeding disorders. A holistic view of services provided by respondents as well as their views and perceptions was also obtained. Results of the study highlighted areas where knowledge and skills of respondents may be lacking. This allowed for suggestions to be made regarding enhancement of undergraduate and postgraduate training and continued education within a transdisciplinary approach. Furthermore, the questionnaire itself may have served to enlighten respondents about the complex issues surrounding feeding disorders, making

them aware of relevant aspects such as nutrition, challenging them on their current practice and stimulating thoughts regarding their competencies and needs. Lastly, the results of this study may be used as underpinnings for further research regarding intervention for feeding disorders within South Africa.

The contemporary nature of this study may be viewed as a positive aspect when considering the current emphasis placed on issues pertinent to all EI health care disciplines, such as the need for holistic, family-based early intervention within a transdisciplinary approach (Rossetti, 1996). Due to the limited research on the experiences and perceptions of South African speech-language therapists regarding nutritional issues in feeding therapy, the greatest value of the current study may stem from the new approach it has put forth.

Suggestions **for clinical and research implications** are presented based on the results obtained. In order to clearly present *assessment implications*, a framework was created, which integrates selected methods of assessment with the areas of assessment that respondents appear to have overlooked or neglected. This framework is displayed in Table XIII. Assessment methods are presented on the y-axis, including the methods most frequently used, less frequently used and infrequently used by the respondents (see Table V). The assessment areas are displayed on the x-axis and include least assessed areas, as well as areas assessed to a moderate degree (see Table IV). The crosses (X) indicate where specific areas could be assessed using particular methods of assessment.

The clinical purpose of this framework is to enhance awareness of factors, including nutrition, which affect the feeding process, in order to achieve a more holistic view of clients with feeding disorders, so that appropriate treatment may be provided.

Table XIII: Framework for integrating areas and methods of assessment

Assessment Methods	Cardio-pulmonary Stability	Appetite	Caregiver Compe-tence	Feeding Interaction/ Management	Child Temper-ament	Diet (including age of weaning)	Commun-ication	Illness	Systemic Factors
Feeding/ Swallowing Evaluation (including oral-motor examination)	X	X				X			
Caregiver Interview (including case history)	X	X	X	X	X	X	X	X	X
Health/ Medical Records	X	X				X		X	
Observe Mealtimes	X	X	X	X	X	X	X		
General Development & Communication Developmental Scales	X			X	X		X		
Family Assessment Scales			X	X	X				X
Formal Tests and Objective Methods	X								
Food Diary		X	X			X			X

Assessment Areas

- **Areas least assessed and methods least used**
- **Areas assessed and methods used to a moderate degree**
- **Methods of assessment most frequently used**

In considering the infrequent assessment of cardiopulmonary stability, it is suggested that although speech-language therapists do not have the training or expertise to directly assess *cardiopulmonary stability*, the respondents should still be aware of the presence of this disorder in order to realize the implications on development and treatment. They should therefore take note of any such disorder or associated disorder, such as prematurity, recorded in the health and medical records, which they already frequently use. A medical history reflecting frequent respiratory infections, especially pneumonias and asthma should arouse suspicion of aspiration, requiring a dysphagia evaluation (Bryan & Pressman, 1995). Furthermore, symptoms of cardiopulmonary disorders may be observed by watching and listening for signs during the caregiver interview and case history, feeding or swallowing evaluation, and observation of mealtimes. Such signs may include reduced endurance, FTT, poor coordination of suck-swallow-breathe sequence, non-rhythmical sucking or suckling pattern and oral

defensiveness or sensitivity, which are feeding problems associated with cardiac defects (Hall, 2001). Problems associated with respiratory disorders also include reduced endurance, uncoordinated suck-swallow breathe patterns, as well as weak suck, increasing number of sucks per swallow as feeding increases and agitation during meals (Hall, 2001). If a cardiopulmonary disorder is suspected, then videofluoroscopy may be necessary to determine the safety of swallowing, as this is particularly important for children with histories of cardiac and/or respiratory compromise (Hall, 2001), while referral and formal testing conducted by other members of the team may be also be required.

It is also important to assess *illness* regularly, and take note of frequent infections, as this can give an indication of the child's immunity and health status. Insight into illnesses may be achieved during the caregiver interview, as well as when investigating health and medical records. A thorough history may raise the possibility of underlying pulmonary disorders in some children with poor growth who may not have been diagnosed with any predisposing pulmonary condition, for example a history of chronic cough, wheezing, or recurrent pulmonary infections (Berkowitz, 1999). Chronic cough may also be noted, which could occur as a result of GER and intermittent aspiration, while cough in association with growth impairment may occur in children with paediatric HIV/AIDS (Berkowitz, 1999). Furthermore, recurrent otitis media or sinusitis together with large tonsils and a history of snoring may indicate tonsillar-adenoidal atrophy, which may lead to growth deficiency as a result of mechanical feeding difficulties (Rider & Bithoney, 1999). The latter example demonstrates the importance of a holistic assessment that goes beyond the mechanical feeding process.

Factors that may be related to illness, are *appetite,* as well as *diet.* Assessment of these aspects can be incorporated into all frequently used methods. For example, appetite may be assessed by observing the child's interest in food

during the feeding evaluation, as this is important to consider before oral feeding can be attempted (Hall, 2001). Furthermore, health and medical records can provide valuable information concerning whether the child is on a restricted medical diet due to disorders such as diabetes. Often, such diets are uninteresting, leading to a poor desire to eat, thus affecting the feeding process. For example, the dictated PKU diet is very monotonous and unappetizing leading to frequent feeding problems in these children (Kedesdy & Budd, 1998). Records may also indicate whether medication is being administered for disorders ranging from epilepsy to a common cold, which may also impair appetite and affect growth (Berkowitz, 1999). Medications such as bronchodilators and diuretics, used in treatment of infants with disorders such as BPD, may alter appetite and cause side effects that affect food intake (Berkowitz, 1999) and should therefore be considered in assessment.

A diet history may be beneficial in assessing the cause of undernutrition (Winter & Oleske, 1999). It is therefore important that a food diary be incorporated into the assessment procedure and this should include the mealtime schedule, timing, types of food, quantity, as well as snacks and drinks, over a period of three days. Although speech-language therapists would not use this tool to estimate specific caloric intake as a dietician would, a food diary would be valuable in gaining insight into the quality, quantity and appropriateness of the diet. It would also give an indication of caregiver competence or maladaptive nutritional beliefs. It may be noted that a specific food group such as fats is absent from the diet due to misplaced health or weight concerns, or parents may be offering foods that are developmentally inappropriate, poorly digestible or low in caloric density (Satter, 1999). Such findings may require referral to a dietician. It may also be found that parents are allowing the child to graze throughout the day leading to a poor appetite at mealtimes (Kedesdy & Budd, 1998). Furthermore, insight may be gained into systemic factors as poverty may be restricting the caregivers from providing balanced diets, requiring intervention from a social worker. A diet

history is therefore important in assessing all children with growth impairment in order to determine the level of nutritional adequacy (Berkowitz, 1999), and may highlight reasons for lack of food intake.

The following three aspects of assessment that need to be included and are related to each other are *caregiver competence*, *feeding interaction or management* and *child temperament*, which may be addressed during the caregiver interview and observation of mealtimes. To assess these aspects more comprehensively, family assessment scales should be made use of, which would also give an indication of systemic factors and stressors that may be influencing the family and feeding dynamics. Families may be experiencing stress related to poverty, housing, employment or relationships, which may jeopardize their child's nutritional and feeding needs. To assess such aspects, information can be gathered about family responsibilities, stressful life events and supportive roles of family members, focusing on nurturance and feeding (Black et al., 1999). Many of the respondents reported a high occurrence of poverty, which is a wide spread problem in South Africa and a major contributor to malnutrition. It is therefore essential to gain insight into the availability of food, as the family may encounter environmental constraints such as unavailability of transport, grocery stores, or economic constraints (Rider & Bithoney, 1999).

Family assessments may provide further information regarding cultural factors that influence nurturance, food selection and mealtime behaviours (Black et al., 1999). Inquiries should be made about the quality of the feeding relationship and the parent's attitudes and concerns or satisfaction with the child's eating and growth (Satter, 1999). Insight may be gained into how much support is being provided or how much pressure is being placed on the child, as parents may be providing too little support by failing to respond to their child's cues for feeding, or they may be overly controlling in coercing or forcing their child to eat more than is wanted (Satter, 1999). Often a child's temperament contributes to the

parent's under supportive or over controlling behaviour as passive or ill infants may not provide communicative cues and are therefore underfed, or struggles for control may be elicited from an aggressive toddler (Kedesdy & Budd, 1998; Satter, 1999). For example, many infants born prematurely, or who are ill are both easily agitated and sleepy, leading to disrupted feeding relations (Satter, 1999). In order to understand the relationship between feeding and the temperamental characteristics of the child, family dynamics and the relationship between parent and child must be examined (Black et al., 1999)

Therefore the feeding relationship comprises of complex interactions that take place between caregiver and child, and depends on the abilities and characteristics of both parent and child (Kedesdy & Budd, 1998; Satter, 1999). Early identification of feeding relationship problems may allow for primary prevention of later feeding problems (Satter, 1999), however, this requires an in depth assessment of child, caregiver and environmental factors, and not just the feeding process alone.

It is also suggested that videotaping be used to aid in diagnosis and subsequent treatment of feeding and interactional problems (Black et al., 1999). This method can be used to investigate parent-child interaction, forced or inadequate feeding techniques, oppositional feeding patterns, environmental patterns, and child distractibility, as well as oral-motor disorders and poor sucking (Rider & Bithoney, 1999). Furthermore, this method can be used to share information and train other team members including professionals and family members.

Related closely to the above aspects is communication assessment, as many child and caregiver factors affect communication, including cue insensitivity, distracting environment, and difficult child temperament (see Figure 2). To further enhance the assessment of communication, it is recommended that communication development scales be included in the assessment process, as

well as parent-child interaction scales, especially since this is a particular area of speech-language therapy expertise. Insight into interactional patterns may provide cues about the communication process, overall cognitive skills and deficits in social interaction, which may be affecting the present feeding deficit (Wooster, 2000). Malnutrition in the first two years of life affects brain growth and subsequently impairs development, cognition and behaviour, which may necessitate developmental, motor, behavioural, cognitive, and speech and language assessment (Rider & Bithoney, 1999). Assessment of these factors may indicate eligibility for more specific early intervention services, such as occupational therapy or speech-language therapy (Black et al., 1999), as it is suggested that early intervention programs be considered for all children younger than three with growth deficiency (Rider & Bithoney, 1999). The use of scales or norm-referenced tests could then aid in tracking children's developmental progress through the intervention process (Black et al., 1999).

In summary, appropriate assessment methods should be used to assess three broad areas. These include firstly, the family and culture, which involves family stressors, economic factors, and availability of food, mealtime scheduling and characteristics of meals. The second area involves assessment of the parents or caregivers, including a careful feeding history that investigates parental beliefs about feeding and growth, eating habits, knowledge about nutritional requirements, response to children's' feeding behaviour, and social support. Finally, issues surrounding the child should be assessed, including their growth and feeding history; oral-motor development; motor, cognitive, language, and socio-emotional development; temperament; feeding behaviours; and parent-child interaction (Black et al., 1999). Many of these aspects may be assessed using methods that respondents reported to being well used already, such as acquiring a case history, which if accurate and thorough, can ascertain the associative factors contributing to the nutritional problems approximately 75% of the time (Wooster, 2000).

Early identification of paediatric dysphagia and feeding problems can improve the child's nutritional status, physical, cognitive, and psychological development, as well as interaction between the child and caregiver (Siktberg & Bantz, 1999). In conclusion, practical suggestions have been made as to how the assessment procedure can be made more comprehensive and effective. In so doing, a more holistic view of the child, family, and systemic factors influencing the feeding process may be obtained, which may allow for effective treatment and referral to appropriate team members.

The realization that the presence of any impairment in the swallowing process places the child at risk for physical, nutritional, and social interaction problems (Siktberg & Bantz, 1999) has significant implications for ***treatment***. As the risk factors for feeding problems, nutritional deficiencies and communication disorders are the same (Crais, 1999); it is suggested that the feeding context may provide an ideal situation to engage in primary and secondary prevention of *communication* disorders. Children with feeding disorders and nutritional problems may not be able to communicate their needs to parents, which provides a unique opportunity for respondents to implement *ECI*. It is also suggested that respondents' *training, education and counselling of caregivers* be enhanced to encompass many diverse areas, particularly psychosocial and nutritional issues surrounding the feeding situation. Caregivers should be trained to focus attention on the baby during feeding, accurately recognize and read subtle communicative cues, and respond appropriately in order to elicit more successful communication (Kedesdy & Budd; 1998; Wooster, 2000). In so doing, the child's communication attempts are positively reinforced and a successful pattern of interaction is established whereby frustration is diminished (Wooster, 2000). The respondents possibly need to be made aware to utilize the unique opportunity that the feeding situation provides to enhance communication as well as interaction and bonding of parent and child. This may improve the social component of feeding (Bryan & Pressman, 1995), thus promoting *socio-*

emotional development and parental competency. Improved communication may in turn enhance the feeding situation and promote better nutrition, which may only have further positive repercussions for feeding and communication development.

It is acknowledged that direct nutritional intervention may be outside of the discipline of speech-language therapy, however, by focusing on the *psychosocial* risk factors confounding the feeding process, respondents may play a vital role in *remediation of nutritional problems* and the consequences thereof. This is confirmed by Metallinos-Katsaras and Gorman (1999), who state that nutritional intervention without attention to psychosocial risk factors may be ineffective. This has two implications, firstly that professionals who are addressing undernutrition should broaden their programs or collaborate with ones that address broader needs, such as communication and parent-child interaction, and secondly that programs that serve children at risk should address undernutrition when it occurs. The latter implication suggests a great need for *collaboration* between feeding specialists, such as speech-language therapists and dieticians or nutritional counselors, which demands the application of a transdisciplinary team approach.

Furthermore, it is suggested that respondents need to expand their traditional *role* as feeding therapists by acquiring a broader and more comprehensive view encompassing all the different aspects that influence the feeding process, including communication, interaction and nutrition in order to ensure effective parent-centered intervention and team collaboration. By realizing the link between feeding, communication and nutrition, respondents may become more effective in their *role as feeding and communication specialists* within the feeding context.

According to Louw (1997), one of the roles of speech-language therapists in ECI is to consult with and refer to other professionals, and to participate within a *transdisciplinary team approach* to early intervention. The application of this approach is evidently limited, which implies that respondents, as well as other professionals, may need enhanced transdisciplinary training to recognize the need for services across disciplines in order to make referrals or enlist the assistance of other qualified professionals (Louw, 1997; ASHA, 1989). For example, it is suggested that further training regarding the signs and symptoms of cardiac-pulmonary disorders may lead to more effective collaboration with pulmonologists and cardiologists. In so doing, respondents may gain greater insight into essential organic factors that may be confounding the feeding process and placing the child at risk for possible further developmental disorders, which may allow for more appropriate intervention.

It is evident that respondents require further training regarding the complexities of feeding disorders. Knowledge will allow respondents to identify areas of concern outside their own field, which is necessary for accurate referrals to be made, and for effective functioning within a transdisciplinary team (ASHA, 1989). Another of the speech-language therapist's roles is to provide information to families regarding many issues related to services (Rossetti, 1996), which cannot be done professionally or with confidence if the appropriate knowledge is lacking.

Apart from the respondents' eagerness to enhance their knowledge concerning issues relating feeding, communication and nutrition, implications from the current study suggest the need for enhanced training, in order to fully equip respondents for the field of feeding therapy within ECI. Respondents commented that there is a great need for universities to restructure their undergraduate course on feeding disorders, and that academic institutions should identify therapists with clinical expertise and involve them in student training at an undergraduate level. To add to this, training institutions may foster more of a

transdisciplinary approach to training by asking professionals from other disciplines, such as the dietician field to present lectures, and in so doing providing a more holistic view of feeding disorders. Students from other medical and paramedical disciplines should also receive training in the application of a transdisciplinary team approach, in order to encourage collaboration within the work place. Respondents confirmed that improved training and more practical input from trained feeding specialists is required at a postgraduate level, while attendance of continued education is vitally important and should be encouraged. The organization and provision of multidisciplinary seminars and conferences may also foster more effective collaboration among professional disciplines.

Training institutions should therefore follow up this strong opinion by incorporating relevant theoretical and clinical issues relating nutrition to feeding and ECI into under-and postgraduate training, while continued education should persist in catering for these additional needs in presenting a holistic transdisciplinary approach to early feeding intervention. In so doing, therapists would acquire valuable knowledge and skills, allowing them to provide more effective and cohesive services to clients with feeding and nutritional problems, which would in turn lead to a greater sense of professional competency.

In terms of further **research implications**, it is suggested that an extended study, similar to that of the current study, may be conducted nation-wide in order to gain a more comprehensive and representative perspective of the experiences and perceptions of speech-language therapists providing feeding therapy and ECI in the whole of South Africa. Furthermore, in order to stimulate transdisciplinary team functioning, research may investigate the knowledge and awareness of other medical professions regarding the role of speech-language therapists in early intervention and feeding therapy. Insight into the perceptions of other professions may highlight needs to educate them regarding the

importance of the role speech-language therapists as feeding specialists. Exchanging such information may in turn increase the extent and timeliness of their referrals, contributing to improved outcomes of clients (Kritzinger, 2000), while fostering more effective transdisciplinary collaboration.

Respondents revealed further needs for research and knowledge regarding the influence of paediatric HIV/AIDS, and social or economic issues on the feeding process, as respondents are in frequent contact with these widespread, prominent problems necessitating research within South Africa. Furthermore, due to the multicultural and multilingual nature of South Africa (Pickering et al., 1998), research is required concerning cultural practices and preferences, as feeding practices are culturally biased and wide cultural variation exists in the timing, type, amounts of food and beliefs about appropriate styles of feeding (Black et al., 1999). Professionals need to be competent in sensitively building bridges across cultural borders to ensure effective service delivery and optimum development (Battle, 1998).

Lequerica (1997) reiterated that within an impoverished context, in which malnutrition may abound, a major need exists for effective preventative services targeting multiple aspects of the child's functioning. This requires concerted collaborative effort among multiple professionals working together. Research is therefore required to develop economically realistic strategies and socially/culturally appropriate EI programs within areas in need of such services (Lequerica, 1997).

According to Drotar and Robinson (1999), in order to develop more effective methods of clinical management, a great need exists for continuing research concerning the psychosocial aspects of the complex disorder of paediatric undernutrition/FTT, as research concerning these aspects of FTT is very much in its infancy. It is suggested that research into psychosocial aspects, particularly

communication and parent-child interaction, is very appropriate and essential within feeding therapy in general, not just for children who are malnourished. Such research within the field of speech-language therapy is lacking, possibly due to the focus on the process of feeding alone, which therefore necessitates deeper insight and understanding of the complex nature of feeding disorders, which may lead to respondents acquiring a new perspective of their role as communication interventionists within the feeding context.

Other high-priority research areas include the description of longer-term psychological and family outcomes of children with early histories of undernutrition, as well as documentation of factors accounting for the higher rates of behaviour and developmental problems and parent-child relationship difficulties, that have been noted in children with FTT (Drotar & Robinson, 1999). Research within these areas would enhance knowledge, understanding and professionals' ability to intervene appropriately within a holistic manner.

Kedesdy and Budd (1998) also identified further research needs. These include the relationship between food refusal and poor weight gain, and the proportion of children diagnosed with FTT who exhibit feeding disorders such as selective eating or food refusal, as these children may well be found in the caseload of speech-language therapists. Research may also provide answers to questions such as the causative elements affecting a child's growth (Sherry, 1999) and the combination of factors leading to poor feeding, e.g. child constitutional factors, parental mismanagement, and undetected oral-motor dysfunction. Furthermore, although effects of EI programs on development are generally conceded, effects on weight gain are less well established (Kedesdy & Budd, 1998) and may require research attention. It is suggested that research within the field of speech-language therapy may investigate the relationship between frequently occurring problems associated with poor feeding, such as OMD, and poor nutrition and growth. This may contribute to the conquest of undernutrition,

which is one of the most important challenges facing the new health service within South Africa (Chopra & Sanders, 1997).

As research, training and service delivery are inherently interlinked (Uys & Hugo, 1997), research in the above areas will enhance clinicians' knowledge and skills regarding the complex nature of feeding disorders and will pave the way for more dynamic training courses, more effective and accountable service delivery and better client outcomes. This is well encapsulated by Uys and Hugo (1997, p. 24) who state that teaching should "...anticipate and react to the needs of the clients, while research should develop new knowledge to improve teaching, as well as advance the efficacy and quality of service delivery". In the end, the critical challenge of EI is "how to capitalize on *current knowledge* and *mobilize our collective resources* to ensure better health and developmental outcome" (Meisels & Shonkoff, 2000, p. 26).

In **conclusion**, due to the complexity of paediatric feeding disorders, the importance of viewing and treating a child with a feeding disorder holistically must be emphasized. A comprehensive understanding is therefore required that encompasses not only the process of feeding, but the psychosocial and nutritional dynamics as well, especially in considering the added risk these factors may impose on physical, emotional, social, cognitive and communication development (Squires, 2000; Siktberg & Bantz, 1999; Laude, 1999). The broadening of perspectives by means of holistic research and training, may improve the competencies of speech-language therapists, which would enhance their valuable contributions to more effective service delivery, as well as transdisciplinary team functioning, which is vital in the South African context. Ultimately, extensive efforts should be made by all team members to ensure the "positive interaction of nutritional, medical, psychosocial, developmental, and environmental factors", as normal childhood growth and development depends on this (Rider & Bithoney, 1999, p. 173).

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APPENDIX A: COVER LETTER

7 July 2001

Dear Speech-language Therapist

As a Master's student in the Department of Communication Pathology at the University of Pretoria, I am currently conducting a research project regarding Speech-language therapists' perceptions of nutritional issues within the field of Early Intervention and Early Communication Intervention.

This study seeks to gain insight in to aspects such as the frequency of contact speech-language therapists have with children at nutritional risk, assessment and treatment services provided within a team approach, and their views on the role that the speech-language therapist should play in providing services to children with feeding disorders and nutritional problems. By participating in this research project you would be making an invaluable contribution to the enhancement of effective service delivery of speech-language therapists involved in Early Communication Intervention and feeding therapy.

I do realize that you have a busy schedule but I would appreciate your willingness to complete the enclosed questionnaire, which should not take you more than half an hour to fill in. It is also requested that you read and sign the letter of informed consent, which is attached to the questionnaire. If you could then return the completed questionnaire and signed letter of informed consent by mailing it back in the enclosed stamped envelope before 21 September 2001. Your own copy of the informed consent letter will then be sent back to you.

With grateful appreciation of your co-operation.

Yours sincerely

Felicity Evens
M.Communication Pathology

Professor Brenda Louw
Department of Communication Pathology
University of Pretoria

APPENDIX B: INFORMED CONSENT FORM

Participant's Name: _____ Date: ----------

Principle Investigator: F.J. Evens, University of Pretoria

INFORMED CONSENT

1. *Title of Study:* The Perceptions Of Speech-Language Therapists with regard to Nutritional Issues in Early Intervention and Early Communication Intervention.
2. *Purpose of the Study:* The purpose of the study is to investigate speech-language therapists' knowledge, awareness and perceptions of feeding disorders and related nutritional issues in Early Communication Intervention.
3. *Procedures:* I will be asked to participate in a survey by completing a written questionnaire, which should take approximately half an hour to fill in. Four areas of information will be targeted in the questionnaire, namely, biographical information, service delivery, team involvement, as well as training and attitudes regarding feeding problems and related nutritional deficiencies. The questionnaire will be mailed to me, and a time period of approximately two weeks will be provided for me to complete it. Thereafter, I will return the questionnaire in the self addressed, stamped envelope provided.
4. *Risks and Discomforts:* There are no known risks or discomforts associated with this project.
5. *Benefits:* There are no known direct benefits to me for participating in this study. However, the results of the study may contribute to enhanced and more effective training and service delivery of speech-language therapists involved in the field of Early Communication Intervention.
6. *Participant's Rights:* I may withdraw from participating from this study at any time.
7. *Confidentiality:* I understand that my responses to the questionnaire will be kept confidential. The results of this study may be published in professional journals or presented at professional conferences, but my records or identity will not be revealed unless required by law.
8. If I have any questions or concerns, I can call Felicity at 0824636901 at any time.

I understand my rights as a research subject, and I voluntarily consent to participation in this study. I understand what the study is about and how and why it is being done. I will receive a signed copy of this consent form.

_____

Subject's Signature

_____

Signature of Investigator

APPENDIX C: DESCRIPTION OF TERMINOLOGY & ABBREVIATIONS

DESCRIPTION OF TERMINOLOGY

1. ***Early Communication Intervention:*** Intervention, including both assessment and treatment, provided to families and their children below the age of three, who demonstrate, or are at-risk for demonstrating, either a disability or delay involving communication, language, speech, or pre-requisite oral motor behaviour (ASHA, 1989, p.32).
2. ***Early Intervention:*** The primary goal of EI is to facilitate development in order to prevent developmental delays and disorders from occurring and to lessen the severity of existing developmental delays and disorders as early as possible (Rossetti, 1996; Guralnick, 1997).
3. ***At Risk Factors:*** Any factor that interferes with the infant's ability to interact with the environment in a normal manner or to develop according to known patterns and developmental sequences, is termed a risk factor. Risk factors may be biological, environmental or established factors which can cause or contribute to the presence of a developmental or communication delay (Rossetti, 1996).
4. ***Feeding Disorder:*** Variations in ingestive behaviour that are sufficiently divergent from the norm to result in personal or familial distress, social or developmental risk, or negative health consequences," (Kedesdy & Budd, 1997, p. 6).
5. ***Nutritional Deficiency:*** Weight for length less than the 50th percentile is an objective measure of inadequate nutrition (Rosenthal et al., 1995).
6. ***Malnutrition:*** Farber et al. (1997) define *undernutrition* as the underconsumption of nutrients or energy, and can be identified by early signs of poor weight gain and a decrease in muscle and fatty tissue. If undernutrition is severe and progresses, it could lead to and become *malnutrition,* in which growth in length and head circumference is usually reduced.
7. ***Failure to Thrive:*** A syndrome used to describe infants and children who demonstrate weight loss or difficulties in gaining weight with an overall weight below the third percentile for the appropriate age group. It is defined primarily by the lack of adequate nutrition and consequent poor growth (Rosenthal et al., 1995). Malnutrition manifests itself as severe *failure to thrive* (FTT), also known as a growth deficiency (Lopez, 1997). Clinically, this term is applied to young children or infants who fail to meet age standards, in both development and growth.
8. ***Dysphagia:*** A disorder of swallowing. Any difficulty that interferes with safe and comfortable swallowing or, overall, with the nourishment of the individual or control of oral secretions is a symptom of dysphagia (Rosenthal et al., 1995).
9. ***Food Diary:*** A recall diet recording the child's dietary intake over a period of time, e.g. three days, in order to assess the intake (Rosenthall et al., 1995).
10. ***Feeding Specialist:*** The professional person involved with the management of feeding problems. May be a speech-language therapist, occupational therapist or physiotherapist, but must have received specialized training in the assessment of and intervention in oral feeding problems.

ABBREVIATIONS

ECI: Early Communication Intervention

EI: Early Intervention

NICU: Neonatal Intensive Care Unit

LBW: Low birth weight

AIDS: Acquired immune deficiency syndrome

FTT: Failure to thrive

ENT: Ear, Nose and Throat Specialist

APPENDIX D: QUESTIONNAIRE

V1			1-2

INSTRUCTIONS:
Please answer the following questions by indicating the appropriate answer or answers with a X, or fill in your answer in the space provided.

PLEASE NOTE: Whenever the term "client" is used in the questionnaire, it is referring to clients who are 0 to 36 months old.
: The gray blocks on the right of each question are for office use only.

A. BIOGRAPHICAL INFORMATION

1. **Where did you receive your training for the profession of Speech-language Therapy and Audiology, and in which year did you qualify?**

Qualification	University	Year
Bachelor's degree		
Master's degree		
Doctorate		
Specify other:		

OFFICE USE			
V2			3
V3			4-5
V4			6-7

2. **How many years of experience have you had in Early Communication Intervention (ECI) and/or feeding therapy?**

	Years

V5			8-9

3. **Where have you provided ECI and/or feeding therapy services? Please mark where applicable.**

Private practice		V6	10
Hospital – neonatal intensive care unit (NICU)		V7	11
Hospital – high care pediatric unit		V8	12
Hospital – general pediatric division/ward		V9	13
Clinic, e.g. a multidisciplinary private clinic		V10	14
Community clinic, e.g. a civic clinic or primary health care clinic		V11	15
Special school: Infant and toddler division		V12	16
University		V13	17
Please specify other:		V14	18

B. SERVICE DELIVERY

4. How often do you work with clients with the following established and at-risk conditions for speech and language disorders, developmental delays, as well as feeding disorders and nutritional risk?
(O = Often; S = Sometimes; N = Never; U = Uncertain)

Risk conditions		O	S	N	U			
Syndromes, e.g. Down syndrome, Velocardiofacial syndrome, Prader-Willi syndrome						V15		19
Acquired conditions and diseases, e.g.	Otitis media					V16		20
	Cardiac and Pulmonary diseases					V17		21
	AIDS					V18		22
Congenital anomalies, e.g. cleft lip and palate, cerebral palsy						V19		23
Sensory anomalies, e.g. hearing loss, visual impairments						V20		24
Anomalies associated with general developmental delay, e.g. metabolic disorders and Phenylketonuria						V21		25
Perinatal anomalies that can lead to developmental delay, e.g. prematurity, low birth weight						V22		26
Intense or prolonged emotional trauma, e.g. abuse and neglect						V23		27
Socio-economic factors or psychosocial stressors, e.g. low educational level of parents, poverty, low socioeconomic status						V24		28
Conditions related to the primary caregiver that can influence the infant negatively, e.g. substance abuse, single parent, adolescent parent, and parental mental or physical illness.						V25		29

5. What percentage of your clients (0-36 months) have feeding disorders?

0%		30-39%		70-79%	
1-9%		40-49%		80-89%	
10-19%		50-59%		90-99%	
20-29%		60-69%		100%	

V26			30—31

6. Do any of your clients with feeding disorders also present with nutritional deficiencies, such as malnutrition, FTT and dehydration?

Yes		No		Unsure	

V27		32

7. If you answered 'yes' to question 6, then what percentage of your clients present with nutritional deficiencies?

0%		30-39%		70-79%	
1-9%		40-49%		80-89%	
10-19%		50-59%		90-99%	
20-29%		60-69%		100%	

V28			33—34

8. What associated problems do you find in your clients who have feeding disorders? (O=Often; S=Sometimes; N=Never; U=Uncertain)

		O	S	N	U			
Anatomical abnormalities, e.g. cleft palate						V29		35
Oral-motor delay/disorder						V30		36
Hypotonia/ hypertonia						V31		37
Oral defensiveness/ hypersensitivity						V32		38
Dysphagia, i.e. swallowing difficulties						V33		39
Delayed feeding skills						V34		40
Behavioural feeding Problems	Food and texture aversion					V35		41
	Disordered feeding interaction/ environmental/social problems					V36		42
Limited food repertoire						V37		43
Dehydration						V38		44
Failure to thrive						V39		45
Gastroesophageal reflux						V40		46
Cardiac/pulmonary disorders						V41		47
Reduced endurance, e.g. early fatigue during meals						V42		48
Traumatically conditioned feeding phobia						V43		49
Specify other:						V44		50

9. To what extent are the following areas covered during your assessment of clients with or at risk for feeding disorders and nutritional deficiencies? (A= Always; O= Often; S= Sometimes; N= Never)

Assessment areas		A	O	S	N			
Motor control, e.g. tone, reflexes, posture						V45		51
Positioning for feeding						V46		52
Oral-motor/ cranial nerve evaluation, e.g. oral reflexes						V47		53
Behaviour/state/sensory integration, e.g. stages of alertness and stress cues						V48		54
Respiratory function/endurance, including airway protection						V49		55
Physiologic control, e.g. cardiopulmonary stability						V50		56
Evaluation of communication						V51		57
Diet	Inadequate food, developmentally inappropriate diet, food groups, consistencies and textures					V52		58
	Duration of breastfeeding					V53		59

Assessment areas continued		A	O	S	N			
Physical incompetence	Oral-motor-disorder, neuromotor functioning, gag reflex, dysphagia					V54		60
	Dysmorphic features, e.g. Cleft palate					V55		61
Appetite	Grazing/meal spacing					V56		62
	Aversive conditioning (fear of eating; feeding phobia), supplemental feeding					V57		63
Illness	Acute/chronic illness, medication					V58		64
	Medical restrictions on certain foods or diet modification, e.g. thickening foods					V59		65
Feeding interaction/ Management	Cue insensitivity, parent-child interaction					V60		66
	Distracting feeding environment					V61		67
Child constitution	Difficult temperament, apathetic, tantrums					V62		68
	Sensory or neurological impairment					V63		69
	Developmental delay					V64		70
Caregiver competence	Maladaptive nutritional beliefs					V65		71
	Neglectful parenting					V66		72
	Parental mental illness					V67		73
Systemic factors	Low socioeconomic status, poverty, hygiene					V68		74
	Family stressors					V69		75
	Multiple caregivers/feeders					V70		76
Feeding history and habits	Mealtime routines, feeding techniques, meal duration, amount of intake					V71		77
	Age of weaning					V72		78
Development	General development, growth					V73		79
	Feeding milestones, self feeding skills					V74		80
Specify other:						V75		81

10. Which factors do you take note of in assessing nutritional status?
(A= Always; O= Often; S= Sometimes; N= Never)

	A	O	S	N			
Thinness and loss of subcutaneous fat					V76		82
Weight for height less than the 50th percentile					V77		83
Frequent infections					V78		84
Prolonged feeding time					V79		85
Specify other:					V80		86

11. Which methods of assessment do you use to assess clients who have or who are at risk for feeding disorders and nutritional deficiencies? (A= Always; O= Often; S= Sometimes; N= Never)

Assessment method	A	O	S	N			
In-depth case history					V81		87
Health and medical records					V82		88
Caregiver interview					V83		89
Observation of mealtimes					V84		90
Food diary					V85		91
Feeding or swallowing evaluation					V86		92
Feeding skill and milestone scales					V87		93
Oral-motor examination					V88		94
General developmental scales					V89		95
Communication developmental scales					V90		96
Family assessment scales					V91		97
Informal/descriptive methods					V92		98
Formal tests					V93		99
Objective methods, e.g. videofluoroscopy					V94		100
Specify other:					V95		101

12. To what extent are the following areas included in your teams' and/or your treatment of clients with or at risk for feeding disorders and nutritional deficiencies? (A= Always; O= Often; S= Sometimes; N= Never)

Treatment areas	SLT Treatment				Treatment by other team members							
	A	O	S	N	A	O	S	N				
Feeding therapy									V96			102-103
Non-oral feeding management									V97			104-105
Introduction of oral feeding skills, e.g. non-nutritive sucking and oral stimulation									V98			106-107
Oral-motor therapy									V99			108-109
Attain age-appropriate feeding skills									V100			110-111
Reduce oral aversions to feeding									V101			112-113
Transition from tube to oral feeding									V102			114-115
Establish appropriate feeding schedule									V103			116-117
Establish optimal infant state and position									V104			118-119
Environmental modification									V105			120-121
Socio-emotional development									V106			122-123
Maintain adequate nutrition and hydration									V107			124-125
Expand food repertoire									V108			126-127
Diet modification									V109			128-129
Early communication intervention									V110			130-131
Caregiver child interaction									V111			132-133
Caregiver education, counseling and training about feeding and nutrition									V112			134-135
Specify other:									V113			136-137

13. If you refer clients with feeding or nutritional disorders to other professionals, what are the reasons for these referrals? Please mark where applicable.

Client presents with:		
Health problems		
Developmental problems:	Growth retardation	
	Motor disorders	
	Cognitive disorders	
Behavioural problems		
Specify other:		

V114		138
V115		139
V116		140
V117		141
V118		142
V119		143

14. Additional comments:

V120			144-145
V121			146-147

C. TEAM INVOLVEMENT

15. Do you follow a team approach during ECI services?

Yes		No	

V122		148

16. When assessing and treating clients with feeding disorders and possible nutritional deficiencies, do you work in collaboration with the following professionals?
(A = Always; O = Often; S = Sometimes; N = Never)

TEAM MEMBERS	A	O	S	N
Pediatrician				
Primary care physician				
Neurologist				
Gastroenterologist				
Pulmonologist				
Radiologist				
ENT				
Dietician				
Nurse				
Physiotherapist				
Occupational Therapist				
Psychologist				
Social Worker				
Teachers of special school				
Speech- language therapist				
Parents/Caregivers				
Daycare caregivers				
Specify other:				

V123		149
V124		150
V125		151
V126		152
V127		153
V128		154
V129		155
V130		156
V131		157
V133		159
V134		160
V135		161
V136		162
V137		163
V138		164
V139		165
V140		166
V141		167

17. Have you found it easy to develop a network between professionals to provide a team approach to feeding disorders?

Yes		No	

V142		168

Comments:

V143			169-170
V144			171-172

18. What is the nature of your collaboration with team members?

Interdisciplinary	Disciplines that work in co-ordination but separately and provide a comprehensive array of services.	
Multidisciplinary	A group of individuals from a variety of disciplines, who co-operate but are discipline specific	
Transdisciplinary	The crossing of traditional disciplinary boundaries by team members, working through one agent	

V145		173

D. TRAINING AND ATTITUDES REGARDING FEEDING PROBLEMS AND RELATED NUTRITIONAL DEFICIENCIES

19. If you received any training in feeding therapy, what type of training did you receive and what was the nature thereof?

Type of training	Nature	Yes	No
Undergraduate	Clinical		
	Theoretical		
Postgraduate: any further degrees specifically in feeding intervention	Clinical		
	Theoretical		
Continuing education: any further courses and/or seminars in connection with feeding intervention	Clinical		
	Theoretical		

V146		174
V147		175
V148		176
V149		177
V150		178
V151		179

20. If you received training in feeding therapy, did this training include aspects of nutrition?

Type of training	Yes	No
Undergraduate		
Postgraduate: any further degrees specifically in feeding intervention		
Continuing education: any further courses and/or seminars in connection with feeding intervention		

V152		180
V153		181
V154		182

21. What is your opinion about your theoretical knowledge and practical skills with regards to the following aspects of feeding and nutrition intervention? (Exc. = Excellent; Av. = Average)

Aspects	Knowledge				Skills						
	Exc	Good	Av	Poor	Exc	Good	Av	Poor			
Screening									V155		183-184
Identification of developmental risk factors									V156		185-186
Identification of malnutrition and FTT									V157		187-188
Evaluation of feeding process									V158		189-190
Evaluation of caregiver-child interaction during feeding									V159		191-192
Evaluation of communication during feeding									V160		193-194
Interpretation of evaluation results									V161		195-196
Feeding therapy									V162		197-198
Nutritional intervention									V163		199-200
Caregiver education and counseling about nutritional issues									V164		201-202
Team collaboration									V165		203-204

22. Do you feel it is important for speech-language therapists to have knowledge of:

	Yes	No			
The relationship between feeding disorders and nutritional deficiencies			V166		205
Risk and causal factors for nutritional deficiencies			V167		206
Symptoms and signs of nutritional deficiencies			V168		207
Complications and consequences of nutritional deficiencies on a child's development and growth			V169		208
Consequences of nutritional deficiencies on a child's cognitive and communication development			V170		209
Treatment/therapy options for nutritional needs			V171		210

23. This question seeks your opinion regarding the role that speech-language therapists should play in treating clients with feeding disorders and nutritional deficiencies.
(A=Always; O=Often; S=Sometimes; N=Never)

The speech-language therapist has a role to play in:	A	O	S	N			
Fulfilling the role of "feeding specialist"					V172		211
Performing a detailed assessment on the feeding process, including oral-motor assessment					V173		212
Performing a detailed communication assessment, including caregiver-child interaction					V174		213
Describing both the rate of development and the pattern of disordered feeding					V175		214
Identifying developmental risk factors in order to refer clients to other professionals					V176		215
Identifying nutritional problems, e.g. FTT; dehydration					V177		216
Incorporating nutritional intervention into treatment goals					V178		217
Provision of parent-centered intervention					V179		218
Provision of appropriate direct therapy to clients					V180		219
Team collaboration					V181		220

24. Do you have any further opinions or suggestions regarding feeding and nutrition within an early communication intervention context?

Yes		No		V182		221

If yes, please describe:

V183			222-223
V184			224-225

_____

_____

_____

_____

_____

THANK YOU FOR COMPLETING THE QUESTIONNAIRE.
YOUR CO-OPERATION AND PARTICIPATION IS HIGHLY APPRECIATED.

APPENDIX E: APPROVAL BY RESEARCH ETHICS COMMITTEE

6 February 2002

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Pretoria 0002 Republic of South Africa Tel (012) 420-4111
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Faculty of Humanities

Department of Psychology

Ms F Evans
27 Columbia Drive
Northcliff
2195

Dear Ms Evans

APPLICATION: RESEARCH ETHICS COMMITTEE

Your application to the Research Ethics Committee of the Faculty regarding approval of appropriate ethical procedures for your MCommunication Pathology degree has been reviewed. I have the pleasure to inform you that your application has now been approved at the meeting of 31 January 2002.

We wish you everything of the best in the execution of your research.

Yours sincerely

Prof Dave Beyers
Chairperson: Research Ethics Committee

cc.: Prof B Louw
Dept of Communication Pathology