
FEEDING CHARACTERISTICS OF INFANTS IN A PRIMARY HEALTH CARE CLINIC IN SOUTH AFRICA

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DECLARATION OF ORIGINALITY

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ABSTRACT

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Title: Feeding characteristics of infants in a primary health care clinic in South Africa.

ABSTRACT

BACKGROUND

There is a limited amount of literature on the feeding characteristics and nature of possible feeding difficulties of infants in a primary health care (PHC) in South Africa.

OBJECTIVE

To describe feeding characteristics and determine the nature of feeding difficulties of infants in a PHC setting in South Africa.

METHOD

Two hundred infants aged six to 12 months (mean age = 8.54, Standard Deviation = 2.18) received a feeding screening by a speech-language therapist at a well-baby clinic in a semi-urban area using the Montreal Children's Hospital-Feeding Scale (MCH-FS). A clinical feeding evaluation using the Schedule of Oral Motor Assessment (SOMA) was completed with 13 infants who failed the screen.

RESULTS

The MCH-FS identified 13 participants with feeding difficulties (6.5%) of which 11 were diagnosed with oral motor dysfunction (OMD) using the SOMA. The 6.5% (n=13) that failed, had mild (n=8;61.5%), moderate (n=2;15.4%), and severe (n=3;23.1%) feeding difficulties, as reported by caregivers using the MCH-FS. The MCH-FS revealed that distraction during mealtimes/following (n=42;21%), food refusal (n=31; 15.5%), caregiver unease about feeding (n=29;14.5%), and problems with vomiting, gagging or spitting (n=28;14%), were characteristics of feeding in this sample. Participants in the age groups six (n=3;27.3%) and 10 months (n=3;27.3%) were prone to OMD. Complementary feeding was introduced appropriately between six and eight months in the majority of the sample (n=122;82%).

CONCLUSION

The study was the first of its kind to describe the feeding characteristics of a group of infants during the transitional feeding stage in late infancy in South Africa. The findings may be used as a starting point for larger scale studies in a similar setting, investigating the development of future caregiver education and health care professional training programmes regarding transitional feeding.

KEYWORDS

Feeding difficulties; feeding characteristics; oral-motor dysfunction; Montreal Children's Hospital - Feeding Scale; Schedule for Oral Motor Assessment.

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LIST OF ABBREVIATIONS

AAP	-	American Academy of Paediatrics
AIDS	-	Acquired immune deficiency syndrome
CF	-	Complementary feeding
CP	-	Cerebral palsy
EBF	-	Exclusive breastfeeding
FASD	-	Foetal alcohol spectrum disorder
HIV	-	Human immunodeficiency virus
HPCSA	-	Health Professions Council of South Africa
LBW	-	Low birth weight
LMIC	-	Lower- middle- income countries
MCH-FS	-	Montreal Children's Hospital Feeding Scale
OMD	-	Oral motor dysfunction
PHC	-	Primary health care
SLT	-	Speech-language therapist
SOMA	-	Schedule for Oral-Motor Assessment
UNICEF	-	United Nations International Children's Emergency Fund
WHO	-	World Health Organization

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CHAPTER 1

1. INTRODUCTION

1.1. CHAPTER AIM AND OUTLINE

The purpose of this chapter is to provide the reader with an overview of relevant literature and previous research on the feeding characteristics of infants in primary health care (PHC). It further explains the rationale for this study. The chapter concludes with terminology used in this dissertation.

1.2. BACKGROUND

The World Health Organization [WHO] (2015) reiterated that poor feeding is considered a risk factor for the survival of infants (Prasad & Gupta, 2015; Puri, 2017). The period from birth to two years is a critical window for the promotion of optimal growth, health and cognitive development (Kuriyan & Kurpad, 2012). Infants' feeding skills mature within the first two years of their life, which are dependent on effective oral-motor functioning and sensory processing (Owen et al., 2012; Vissoker, Latzer, & Gal, 2015). Inappropriate feeding practices, such as the early introduction of solid foods may affect infants' growth and energy regulation, and may contribute to a higher prevalence of obesity and feeding problems within this population (Klag, McNamara, Geraghty, & Keim, 2015; Van der Merwe, Bourne, & Marais, 2007). The early feeding experiences of infants in their first year of life also influence later feeding habits and food preferences (Betoko et al., 2013; Van der Heul, Lindeboom, & Haverkort, 2015). Consequently, insufficient quantities of food, inadequate complementary foods, and poor infant feeding practices early in life may have a detrimental impact on health and growth in these important years (Kuriyan & Kurpad, 2012).

Infant feeding guidelines have been compiled by the WHO (2015), the United Nations International Children's Emergency Fund (UNICEF), the American Academy of Paediatrics (AAP), and other professional bodies, that highlight the importance of developmentally and nutritionally appropriate feeding (Grote et al., 2016; Klag et al., 2015; Saldan, Venancio, Saldiva, & Mello, 2016; Tiwari et al., 2016; UNICEF, 2017). Optimal infant and young child feeding guidelines recommend initiation of breastfeeding within one hour of birth, exclusive breastfeeding (EBF) for the first six months of life, followed by appropriate complementary feeding after six months, along with continued breastfeeding for two years and beyond (Puri, 2017). These guidelines have been identified as public intervention to prevent child morbidity, mortality, and malnutrition (Puri, 2017; Tiwari et al., 2016). In addition to providing adequate nutrition that supports normal growth and development, breastfeeding is linked to numerous advantages for mothers and infants, including a reduced risk of infections and long-term

benefits for the risk of obesity, type-two diabetes, blood pressure and improved performance in intelligence tests (Belfort, 2018; Grote et al., 2016). Despite the benefits, only two-fifths of infants worldwide receive EBF for the first six months of life, and only two-thirds are introduced to solid foods in a timely manner (Puri, 2017).

In South Africa the available national data confirm that most mothers initiate breastfeeding after birth (Du Plessis, Peer, Honikman, & Rene, 2016). However, few babies are exclusively breastfed for the first six months of life (Du Plessis et al., 2016). The most recent South African data revealed that close to 73% of children aged less than one year were breastfed; of these only 32% were exposed to a period of EBF (Statistics South Africa, 2011). The latest EBF estimate of 32% is below the 37% average for lower-middle-income countries (LMICs), however, well above the rate of < 10% documented between 1998 and 2011 (Nieuwoudt, Manderson, & Norris, 2018). Smaller studies in the country revealed that premature introduction of food and liquids to infants below six months of age, can have a detrimental impact on infant and young child nutrition and health (Du Plessis et al., 2016). Mothers frequently introduce complementary foods as early as one month, as it is believed that breast milk is not enough to sustain infants (Goga et al., 2012; Shetty & Khan, 2016).

EBF for the first six months is the best nutritional start for all infant, given the right conditions (Nieuwoudt et al., 2018). However, mothers need to work around practical challenges and negotiate individual, familial, community (including health settings) and societal factors to select a feeding option (or options) that best suits their lives (Nieuwoudt et al., 2018). Several factors can influence infant feeding practices as shown in Figure 1. In the South African population, 70% of infants receive inappropriate breastfeeding and complementary feeding, which can be linked to cultural and socio-economic factors (Mushaphi et al., 2017).

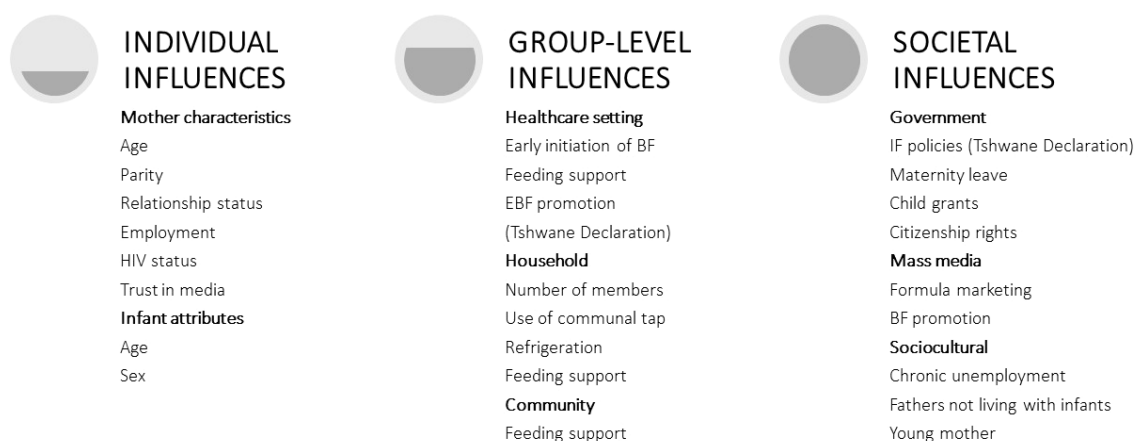


Figure 1 Conceptual framework of factors influencing feeding practices (Nieuwoudt et al., 2018)
BF – Breastfeeding; IF-Infant feeding; EBF – Exclusive breastfeeding

Many infants in South Africa receive complementary foods with breastfeeding between two and three months of age, and in some cases, even within a few days after birth (Du Plessis et al., 2016). Complementary feeding is a transitional phase from exclusive breastfeeding to family food when breastmilk alone is not sufficient to meet the nutritional requirements of infants (Lange et al., 2013; Puri, 2017). Appropriate complementary feeding encompasses adequacy in terms of quantity, frequency, diversity, and energy density of food fed to infants (Puri, 2017). Despite South African health workers advocating EBF for six months, poor infant feeding practices remain among women with, and without HIV (Mnyani et al., 2016; Mulol & Coutsoudis, 2017).

1.3. PROBLEM STATEMENT AND RATIONALE

In South Africa, HIV-positive women are afforded the opportunity to breastfeed exclusively for six months, introduce complementary foods from six months, and continue breastfeeding for up to 12 months, with the provision of infant and maternal antiretroviral therapy (Genetu, Yenit, & Tariku, 2016; Mnyani et al., 2016; National Department of Health: South Africa, 2015). In higher income countries, such as the United States, a different approach is followed as mothers have access to clean water and affordable replacement feeding, the Centre for Disease Control and Prevention (CDC) and the AAP recommend that HIV-infected mothers completely avoid breastfeeding their infants, regardless of ART and maternal viral load (Centers for Disease Control and Prevention [CDC], 2018).

Globally, limited resources and unsupportive parent-infant relationships maintain inappropriate feeding practices and may contribute to under-nutrition in LMICs (Horodyski et al., 2011; UNICEF, 2017). Parental feeding styles, cultural factors, and type of foods fed may influence the weight and later feeding habits of infants (Jingxiong et al., 2009). Infants should not be introduced to complementary feeding before four months or delayed after six (Betoko et al., 2013; Klag et al., 2015). Mothers may misinterpret infant feeding cues, use controlling feeding styles, and implement poor feeding practices, which can affect infants' ability to regulate food intake (Horodyski et al., 2011). Mealtimes may be a source of satisfaction for infants and parents when feeding skills are intact. Yet, problems with feeding can be a potential source of significant stress for families (Vissocker et al., 2015). Caregiver-infant relationships and the intertwining influence of their socio-economic context, and cultural milieu, shape the feeding practices, which may underlie the development of feeding problems later on (Berg, 2012).

As a LMIC, South Africa presents with preterm birth and low birth weight (LBW) rates as high as 14.17%, as opposed to seven percent in high-income countries (Fouché, Kritzinger, & Le Roux, 2018).

The high prevalence of LBW and preterm birth in South Africa contributes to feeding difficulties (Viviers, Kritzinger, & Vinck, 2016). A recent study revealed a high prevalence (64.2%) of oropharyngeal dysphagia in high-risk neonates in South Africa (Da Costa, Kruger, Kritzinger, & Graham, 2019). HIV and AIDS, foetal alcohol spectrum (FASD), preterm birth and LBW, and cerebral palsy (CP) are also contributing risk factors associated with infant malnutrition, feeding difficulties, and poor survival rates (Arvedson, 2008; Goga et al., 2012; Morden et al., 2016; Prasse & Kikano, 2009; Rogers & Arvedson, 2005; Shetty & Khan, 2016; Udall, 2007; Valley et al., 2013). Extreme poverty may lead to inappropriate feeding environments, as well as the presence of hostility and disorganization, often creating a delay or impairment in typical feeding and developmental outcomes in infants (Aldridge, Dovey, Martin, & Meyer, 2010; Daelmans et al., 2017).

As little is known about the nature of feeding difficulties affecting South African infants and their transition from liquids to solids, research on this topic is fundamental (Duong, Binns, & Lee, 2004; Li, Li, Ali, & Ushijima, 2003; Saldan et al., 2016; Vitta et al., 2016). Feeding problems are common in early childhood (Tauman et al., 2011) and are heterogeneous in nature, often developing due to medical complications, but are maintained over time by behavioural factors, such as, refusing developmentally appropriate textures, having lengthy mealtimes, food selectivity, and challenging mealtimes (Menzies, Hughes, Leach, Belessis, & Krishnan, 2017). Additional causes of feeding problems include developmental and neurological conditions, environmental disruption, parental ignorance, infant temperament, and psychological factors, as well as respiratory problems, gastro-esophageal reflux, and structural problems such as cleft lip or palate (Estrem, Pados, Park, Knafel, & Thoyre, 2017; Menzies et al., 2017; Prasse & Kikano, 2009; Tauman et al., 2011).

Internationally, 25% of typically-developing infants and up to 89% of infants with developmental disabilities are affected by some feeding difficulty (Arvedson, 2008; Benjasuwantep, Chaithirayanon, & Eiamudomkan, 2013; Ramsay, Martel, Porporino, & Zygmuntowicz, 2011; Van der Linde & Kritzinger, 2013). The high prevalence of feeding difficulties is concerning as early eating patterns and behaviours may influence later eating habits, food preferences, and infant growth. Feeding difficulties are often identified late, as early signs of feeding problems can be diverse and non-specific, which is attributed to confusion, lack of awareness, and poor identification amongst professionals (Estrem et al., 2017). Feeding problems left untreated, may significantly impact on an infant's development, increasing the risk of malnutrition, failure to thrive, as well as behavioural and developmental delays (Ramsay et al., 2011; Sanchez, Spittle, Allinson, & Morgan, 2015). A high prevalence of feeding problems may be associated with the absence of a universally agreed upon definition for feeding

problems in infants, delayed identification, and treatment thereof (Baird, Levesque, Birnbaum, & Ramsay, 2015; Estrem et al., 2017).

The onset and progression of feeding difficulties in infants may be reduced by early identification of the associated risk factors, which may influence and infant's feeding development (Barone, Carucci, & Romano, 2016). However, early intervention services for feeding difficulties in PHC often lack effective procedures. Possibly due to limited time, poor maternal education, poor identification criteria for feeding difficulties, limited material and human resources, a lack of governmental support, and inadequate parent-infant relationships (Berg, 2012; Kuriyan & Kurpad, 2012; Van der Linde & Kritzinger, 2013). These factors can add additional stress to vulnerable communities.

Appropriate feeding practices and oral-motor skills are essential to support infants' nutritional status, growth, development, and survival. To achieve the well-timed age-appropriate transition to solid foods, more information is required to develop preventative feeding interventions (Horodyski et al., 2011). Most of the past research efforts have focused on breastfeeding practices (Klag et al., 2015; Kuriyan & Kurpad, 2012; Puri, 2017; Saldan et al., 2016). However, similar progress has not been made in the area of complementary feeding and the traditional feeding phase in late infancy (Puri, 2017).

SLTs play a primary role in evaluating and treating feeding and swallowing disorders as they have a comprehensive understanding of the signs and symptoms of feeding disorders and oropharyngeal dysphagia, normal and abnormal physiology related to swallowing function, and knowledge of medical issues related to feeding and swallowing disorders (American Speech-Language-Hearing Association [ASHA], 2002, 2008). The SLT may therefore be the first point of contact in the healthcare system for an infant presenting with feeding concerns, thus playing an important role in referring to, or enlisting the help of, other early intervention healthcare professionals such as occupational therapists, dietitians, nurses and psychologists (ASHA, 2008).

The importance of prevention and early identification of feeding difficulties in infants in the PHC is evident. Early intervention programs in PHC setting in LMIC are overburdened due to limited numbers of healthcare professionals, as well as the lack of resources and facilities to implement early intervention services (Samuels, Slemming, & Balton, 2012). Thus, the identification of feeding difficulties should be prioritised (Van der Linde, Swanepoel, Glascoe, Louw, & Vinck, 2015). This would strengthen primary preventative strategies, such as developmental and feeding screening, surveillance and intervention, in order to compensate for risks and to reduce or eliminate resultant

feeding or developmental delays (Van der Linde et al., 2015). Early identification of feeding difficulties in infants would furthermore improve the monitoring of developmental outcomes and vice versa (Barratt & Ogle, 2010).

1.4. RESEARCH QUESTION

What are the feeding characteristics, and the nature of possible feeding problems, in infants visiting a PHC in South Africa?

1.5. TERMINOLOGY AS USED IN THIS DISSERTATION

Breastfeeding: This refers to infants feeding directly at the breast, rather than receiving breast milk by alternative means, such as cup feeding or tube feeding (Krol & Grossmann, 2018).

Exclusive breastfeeding: Exclusive breastfeeding refers to infants who receive breast milk only, with no artificial milk products. Exclusive breastfeeding refers to any feeding method by which breast milk is provided, including direct breast feeding, tube feeding, and cup feeding (Kasahun, Wako, Gebere, & Neima, 2016).

Feeding problems/ difficulties: Difficulties in anticipating food, readying oneself for food, placement of food in the mouth, management of the bolus, transferring the bolus into the pharynx, as well as the interaction between the infant and mother (Delaney & Arvedson, 2008). Infants not progressing through the typical course of steps to independent feeding of table food. Some have difficulty with efficient and satisfying feeding experiences at birth. They stall or struggle to move forward in accepting a variety of tastes and textures, resulting in a regression or sudden change in feeding skills (Borowitz & Borowitz, 2018).

Oral-motor dysfunction: Difficulty in chewing and swallowing, involuntary tonic biting, excessive drooling and intolerance of developmentally appropriate food (Johnson & Harris, 2004; Reilly, Skuse, Mathisen, & Wolke, 1995).

Oral-motor skills: Normal developmental acquisition of eating skills in infants is described in terms of milestones. The milestone sequences are considered to be nipple (breast or bottle), eating from a spoon, drinking from a cup, biting and chewing (Van den Engel-Hoek, Van Hulst, Van Gerven, Van Haaften, & Groot, 2014).

1.6. OUTLINE OF CHAPTERS CONTAINED IN THE DISSERTATION

Chapter 1: Introduction to the topic, problem statement, research question, rationale and terminology as used in the dissertation

Chapter 2: Method used in the research study

Chapter 3: Article submitted to Journal of Paediatrics and Child Health

Chapter 4: Summary of research results, implications and conclusion

CHAPTER 2

2. METHOD

2.1. CHAPTER AIM AND OUTLINE

Chapter two provides in-depth information regarding the research method followed in the present study. The chapter begins by explaining the study aims, and is followed by the research design, ethical principles adhered to, descriptions of the research context, sampling techniques, participant descriptions as well as materials used. The data-collection procedures are also discussed, as well as the approach to data analysis and descriptions of how reliability and validity were ensured in this study.

2.2. STUDY AIM

The aim of this study was to describe the feeding characteristics of infants in a PHC clinic in South Africa, as well as to explore the nature of possible feeding problems identified in this population.

2.3. RESEARCH DESIGN

A descriptive, cross-sectional study within a quantitative framework of research design was used. Descriptive research was used to identify characteristics of an observed phenomenon or explore possible associations among two or more phenomena (Leedy & Omrod, 2015). A descriptive design was used as feeding practices and problems in infants in PHC contexts specifically in South Africa have not recently been described. Cross-sectional research was used to compare the participants feeding practices between the ages of 6 to – 12 months. Quantitative research was used to seek explanations and predictions on the current feeding characteristics of infants in PHC context in South Africa. The intent is to identify relationships among feeding characteristics and the nature of the feeding problems identified in this population.

2.4. ETHICAL CONSIDERATIONS

2.4.1. PERMISSION TO CONDUCT RESEARCH

Ethical clearance was granted from the Faculties of Humanities (Appendix A), at the University of Pretoria (reference number: GW210170112HS) as well as from the Tshwane Research Committee (Appendix B), of the Department of Health (project number: 16/2017). Caregivers (≥ 18 years) provided permission to participate on behalf of their infants. The caregivers received an information leaflet, detailing the relevant information regarding the study (Appendix C). Permission was granted

to peruse the clinic files and briefly interview the caregivers, for demographic information and infant feeding history (Appendix D).

2.4.2. PROTECTION OF HARM

The research participants were not exposed to physical or psychological harm (Leedy & Omrod, 2015). The infants and their caregivers' culture and beliefs were respected throughout the research process. This was achieved through the translation of the consent letters in their selected first languages, as well as utilizing a willing clinic staff member who helped to convey the information to the parents and caregivers of the infants. The researcher was registered with the Health Professionals Council of South Africa (HPCSA) as a student clinician and worked under the supervision of two research supervisors also registered with HPCSA. The researcher was trained in using the outcome measures involved in the study namely the Montreal Children's Hospital - Feeding scale (MCH-FS) and The Schedule for Oral Motor Assessment (SOMA). The participants that presented with feeding difficulties were referred to the SLT at a nearby hospital for further evaluation and intervention. Additionally, all parents/caregivers received handouts with the appropriate feeding milestones for the age ranges six to -nine months and nine to -12 months to guide caregivers in supporting their infants.

2.4.3. VOLUNTARY AND INFORMED CONSENT

Participants were provided with information on the nature of the study and were asked to participate voluntarily (Appendix C). Furthermore, caregivers of potential participants were informed that if they agreed to participate they had the right to withdraw their children from the study at any time without providing a reason (Leedy & Omrod, 2015). The participants' usual care at the clinic was not influenced by their participation in the study. The consent letters contained the following information for the participants: (a) The purpose of the study; (b) duration of the study; (c) an explanation of the procedures that were followed; (d) whether ethical clearance had been granted; (e) participants' rights; (f) possible risks that were involved, and (g) assurance of confidentiality of their information. A willing clinic staff member was utilized to help convey the information on the consent form to the parents or caregivers of infants, ensuring that they fully understood what they were consenting to. The consent letters were also translated to Sepedi and isiZulu, languages often spoken in the area (Appendix E and F), to accommodate those parents/caregivers who were not literate in English. These consent forms were translated by the Department of African Languages at the University of Pretoria. The majority of the parents or caregivers of the infants requested the English version of the consent letters. However, this was not analysed.

2.4.4. RIGHT TO PRIVACY

The principles of the Declaration of Helsinki were used to ensure the participants' privacy and personal information was protected (World Medical Association, 2018). Confidentiality was ensured through the allocation of three-digit number to each participant, to protect their identity. No identifying information was presented in the results (Leedy & Omrod, 2015). Only the researcher and supervisors had access to the names of the participants. The researcher abided by the ethical principles of research and acted in the best interest of the participants and ensured that their rights were respected always.

2.5. SETTING AND PARTICIPANTS

The Stanza Bopape Clinic is a government PHC facility situated in Mamelodi, a suburb in Pretoria-East, Gauteng Province, South Africa (Maleka, Van der Linde, Glascoe, & Swanepoel, 2016). The community consists of 334 577 individuals and 110 703 households (Statistics South Africa, 2011). The three official South African languages predominantly spoken in the area are Sepedi (42.35%), isiZulu (12.15%), and Xitsonga (10.68%) (Statistics South Africa, 2011). This specific baby wellness follow-up clinic aims to provide a holistic treatment approach for caregivers and infants, which includes the following services: immunization, family planning, HIV treatment and general health. Infants seen at the clinic receive immunizations at six, nine and 12 months (Info 4 Africa, 2014).

2.5.1. SAMPLING AND PARTICIPANT SELECTION CRITERIA

Participants were selected using convenience sampling over a period of four months. All caregivers and infants aged six months to 12 months, attending the baby wellness follow-up clinic during this period were approached to participate in the study. The reason for this age group is that before the age of six months infants may be exclusively breastfed or bottle-fed, while from six months onward, infants start to transition from liquids to solids. No infants in the targeted age range were excluded. There were 200 participants whose parents/caregivers provided voluntary informed consent for participation.

2.5.2. PARTICIPANT DESCRIPTIONS

The majority of participants were male ($n=102;51\%$). The mean age of the sample was 8.54 months, (median=9.0, standard deviation [SD] = 2.18). The mean weight of the infant participants was 8.62 kilograms (median = 8.50, SD = 6.14). The caregivers' mean age was 28.25 years.

2.5.3. MATERIAL AND APPARATUS

2.5.3.1. QUESTIONNAIRE

Caregivers were briefly interviewed for demographic information and infant feeding history (Appendix G). The participants' clinic files were used to gather developmental information and the participants' current weight. The questionnaire consisted of three sections: infant information, caregiver information, and the infants' feeding history and development. The infant information section probed the infants' date of birth, current age, sex and HIV status. The caregiver information section enquired about the relation to the infant, the caregivers' age, first language, employment status and, level of education, mothers' age and number of children, parents' marital status, as well as their housing status. The infant feeding history and development section identified any history of neonatal feeding difficulties or associated risk factors, as well as feeding practices, method of feeding, and solid food exposure.

2.5.3.2. MCH-FS

The Montreal Children's Hospital - Feeding Scale [MCH-FS] (Ramsay et al., 2011) allowed the clinician access to a valid and reliable instrument that can quickly verify parental complaints about their child's feeding problems (Appendix H). The scale, a parent-reported tool, targets children six months to six years of age because children younger than six months of age tended to be exclusively breastfed or bottle fed. The tool is easy to administer, taking about 10 minutes to complete (Baird et al., 2015). The MCH-FS consists of 14 items and covers the following important feeding domains with some overlap: oral motor, oral sensory, appetite, maternal strategies used and family reactions to their child's feeding. The MCH-FS allows insight into possible feeding problems - namely oral motor difficulties, selectivity by type of food and possible food refusal (Ramsay et al., 2011). The scoring sheet allows quick conversion of raw scores into T-scores and classification of feeding difficulties as mild, moderate, or severe (Sanchez et al., 2015). The MCH-FS has been validated through pretesting and factor analyses, in both French and English (Sanchez et al., 2015). The scale is based on the assumption that any infants with feeding difficulties will display these behaviours associated with feeding difficulties at a higher frequency than typical infants (Van Dijk, Bruinsma, & Hauser, 2016).

2.5.3.3. SOMA

The Schedule of Oral Motor Assessment (SOMA) is an assessment tool that was developed for the objective assessment of oral motor function in infants from six months, with a proven reliability and validity based on previous studies (Ko et al., 2011; Reilly, Skuse, & Poblete, 1996) [Appendix I & J]. The SOMA was implemented in the presence of the infant's caregiver in cases where infants failed the

MCH-FS screening. The infant was seated in a comfortable position and the assessment was administered and scored according to the SOMA manual by Reilly et al. (1995). The assessment lasted approximately 20 minutes per infant. The SOMA entailed the standardized presentation of a variety of tastes and textures such as puree, semi-solids, solids, and liquids, by the use of a bottle, training cup, and a cup (Ko et al., 2011; Reilly et al., 1996). The type of food presented to infants during the SOMA was dependent on the age and preference of the infant. If a food type was determined to be unfit for consumption, the test was conducted using the remaining type of food (Ko et al., 2011). Ratings made from face-to-face observations, enabling the categorization of oral motor function as normal or as abnormal. Each of the oral motor categories can be described on three levels as depicted in Figure 2 (Reilly et al., 1995).

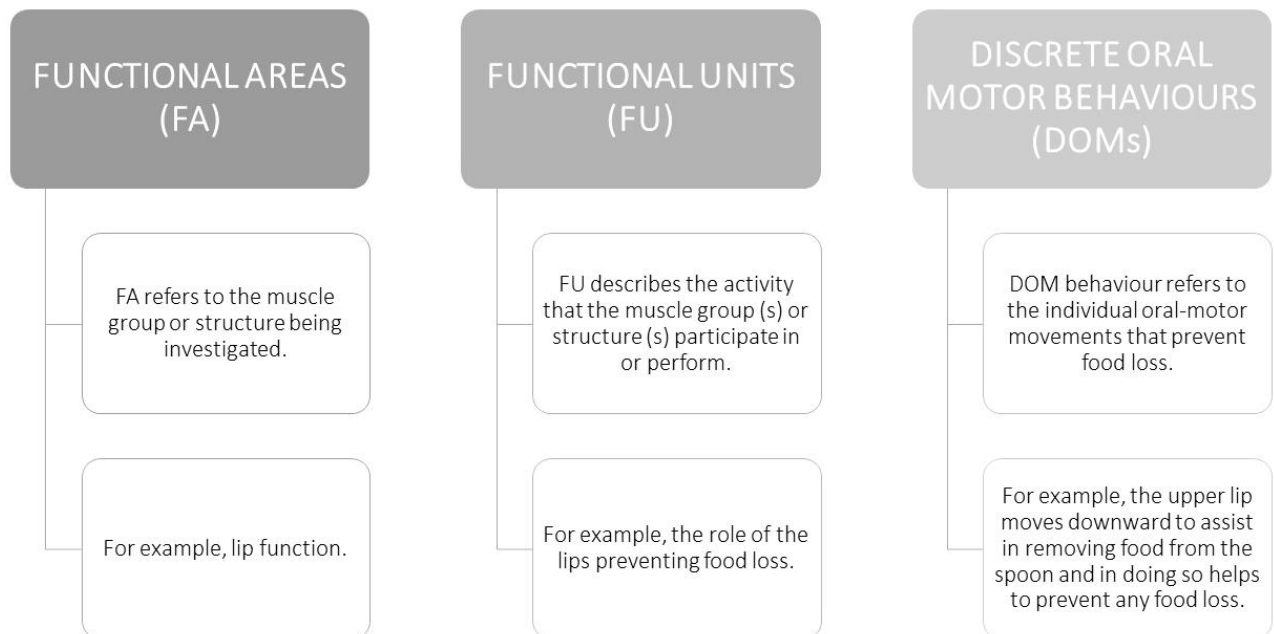


Figure 2 SOMA oral-motor categories (Reilly et al., 1995)

The choice of diagnostic instrument made it possible to include an assessment of various textures of food, and information on how to interpret the result. The SOMA has a proven track record of reliability and validity (Reilly et al., 1995). The food items used for the feeding assessment was adapted to suit the South African PHC context, as depicted in Table 1.

Table 1 Food types used during the SOMA (Reilly et al., 1995)

Consistency	SOMA food	Food used in the study
Puree	Chocolate mousse	Thick yoghurt
	Fromage frais or thick yoghurt	
	Pureed fruit	
Semi-solid	Plain cottage cheese	Soft porridge
	Petit pois (baby peas, warm or cold according to preference)	Mashed banana
Solid	Potato salad	Butternut and sweet potato cubes
	Fruit cocktail in puree fruit juice	Dried apricot
	Mixed fruit (apple/apricot/pear)	
Cracker	Crispbread or cheese snack biscuits	<i>Marie</i> biscuit
	Savoury crackers or digestive biscuits	<i>Lady finger</i> biscuit
	Oat cakes or gingernut biscuits	<i>Nuttikrust</i> biscuit

2.5.4. DATA-COLLECTION PROCEDURES

The data were collected prospectively for a period of six months (May 2017 – June 2017). The data collection was done by one qualified SLT. Figure 4 shows the procedures followed.

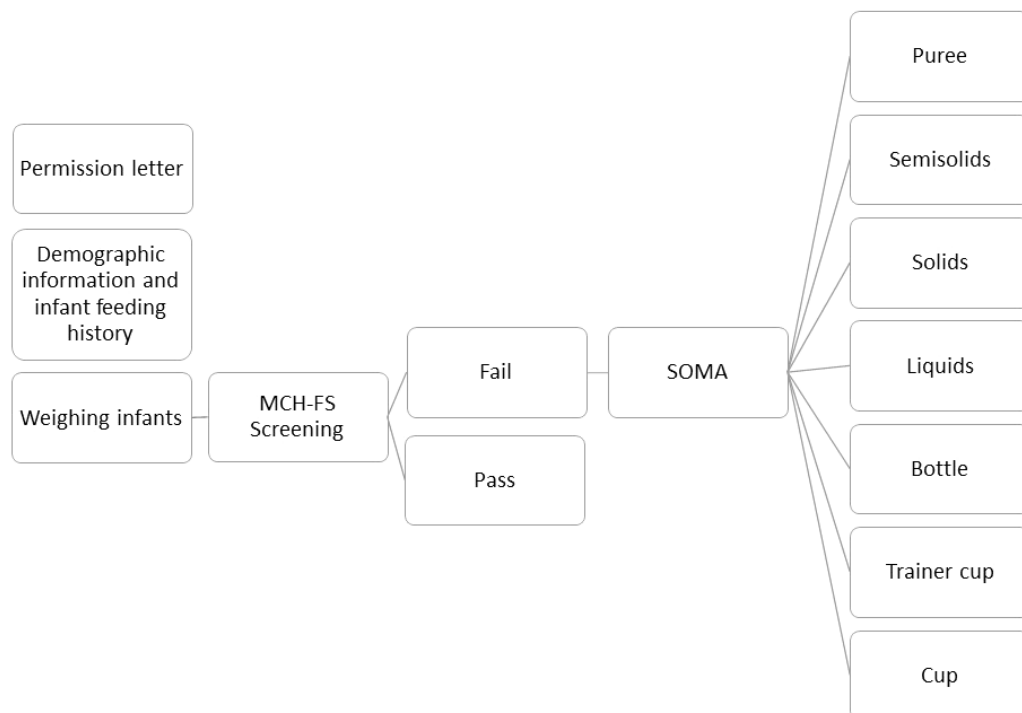


Figure 3 Data-collection procedures followed in the current study

Participants and their caregivers were approached by the researcher where the objectives of the study were explained (Figure 3). Following the caregivers' informed consent, the participants' clinic files were perused, and the caregivers briefly interviewed, for demographic information and infant feeding history. Participants were interviewed using paper-based questionnaires. Most interviews took place in a private room or office. Interviews took on average 20 minutes to complete after the consent process. Additional to the interview, the participants were weighed.

Participants' feeding was screened by the researcher using the MCH-FS (Ramsay et al., 2011). The MCH-FS determined according to the caregivers' report, which domains of the participants' feeding were hindered if any, and therefore established if the participant failed or passed the screening. Participants who passed the screening were routinely followed-up by the clinic. Participants who failed, were assessed using the SOMA to further investigate the extent and nature of feeding difficulties using the consistencies such as puree, semisolids, solids, and liquids, and by using a bottle, training cup, and a cup (Ko et al., 2011; Reilly et al., 1996). The participants who presented with feeding difficulties were referred to the SLT at a nearby hospital for further evaluation and intervention regarding their feeding and swallowing (Appendix K). The caregivers of participants who were at risk of developmental delay were provided with handouts, with information on the developmental feeding and communication milestones (Appendix L).

2.6. DATA ANALYSIS PROCEDURE

Statistical analysis was conducted using IBM SPSS Statistics version 23 (Released 2015, IBM CORP, Armonk, New York). Descriptive statistics were examined for (i) infant demographics and background information, (ii) caregiver demographics and background information, (iii) infant feeding characteristics, (iv) outcomes of the MCH-FS, and (v) outcomes of the SOMA. Analyses of variance or regressions analyses were conducted as appropriate. Parametric variables were compared with a 2-tailed t-test and presented as the mean and SD unless stated otherwise. Categorical variables were compared by 2-tailed Fischer's exact or Chi-square test with data presented as number (percentage). Statistical significance was accepted as $p \leq 0.05$.

2.7. RELIABILITY AND VALIDITY

The infants were weighed on the same clinical scale to establish continuity of weight measurements. The validity and reliability of the study was further enhanced by using outcomes measures with established reliability and validity and that have been published.

The Montreal Children's Hospital – Feeding Scale (MCH-FS)

The MCH-FS was generated according to a biopsychosocial model of feeding disorders (Sanchez et al., 2015). It was validated through pretesting and factor analyses, in both French and English (Sanchez et al., 2015). The results revealed a good internal consistency and reliability measures [construct validity and test-retest reliability] (Sanchez et al., 2015). It was also validated in Dutch and demonstrated to have food sensitivity and specificity (Van Dijk et al., 2016). The pilot study demonstrated that the 14 items Dutch version of MCH-FS has a certain degree of concurrent validity in the sense that its sum score relates to specific benchmark feeding behaviours: food refusal and feeding efficiency and autonomy (Van Dijk et al., 2016). This suggests that it can be used to get a valid impression of the eating behaviour of a child. Each item was rated on a seven-point Likert scale with anchor points at either end (Ramsay et al., 2011). Table 2 and 3 show the various reliability measures and validity of the tool as determined by the various studies.

Table 2 Reliability of MCH-FS (Sanchez et al., 2015)

Test-retest reliability	Pearson's r 0.69 – 0.98.
Intra-rater reliability	-
Inter-rater reliability	-
Internal consistency	Correlations between individual items and total score 0.48 - 0.87.

Table 3 Validity of MCH-FS (Sanchez et al., 2015)

Content validity	Questions generated by psychologist working with paediatric feeding problems.
Construct validity	Factor analysis – single factor accounted for 48% variance; correlations between single factor and individual items = 0.48 – 0.87. Clinical samples (feeding problems, failure to thrive, oesophageal atresia) scored lower than normative sample.
Concurrent validity	Correlated with a composite appetite score (p=0.000)
Sensitivity for detecting children with a clinical diagnosis of feeding disorders	87.3%
Specificity for detecting children with a clinical diagnosis of feeding disorder	82.3%

The Schedule of Oral Motor Assessment (SOMA)

The SOMA is an assessment tool developed for the objective assessment of oral motor function in infants, with a proven reliability and validity based on previous studies, as shown in Table 4 and 5 (Benfer, Weir, & Boyd, 2012; Ko et al., 2011).

Table 4 Validity of SOMA (Benfer et al., 2012)

Content validity	Strong (one excellent study). Literature review and clinical experience to develop items 75-90 items per domain. Items with poor inter-rater reliability or high refusal rate were excluded.
Construct validity: convergent validity	Limited (two studies-poor) (?), $r=0.76 - 0.82$. (+) Resolution of swallowing impairment on PHAD and SOMA: week 8 all impairment resolved (SOMA), 15% mild impairment, $n=13$ children aged 4-15 years with TBI. 20% had OMD on SOMA, 84% had dietary modifications (?), $n=28$ children aged 2;6 – 16;5 years with Worster Drought Syndrome.
Construct validity: discriminative validity	Limited (one fair study) (+), $F=42.43$, $p>0.001$ (+) for overall test. 10-80% false negatives for CP for individuals OMCCs (no statistics); $n=127$ children aged 8-42 months (58 comparison children, 56 NOFT, 12 CP)
Responsiveness	Nil
Overall psychometric rating	11

¹ *Methodological quality rated as: limited, moderate or strong. Statistical strength identified in brackets as, + good, 0 intermediate, - poor, ? unknown* TBI – Traumatic brain injury; CP – Cerebral Palsy; OMCCs – Oral Motor Challenge Category

Table 5 Reliability of SOMA (Benfer et al., 2012)

Test-retest reliability	Strong (one excellent study, one fair) (+) N=1.0 for 84% (+) Comparison of trials 1 and 3 n=10 children aged 8-24 months (seven with NOFT, three comparison children); N=1.0 for 78% (0) n=6 aged 11-27 months with DS (and twin comparisons)
Intra-rater reliability	Nil
Inter-rater reliability	Strong (one excellent study, one fair) (0); N=1.0 for 68% (0) n=10 (three trials per child) children aged 8-24 months (seven with NOFT, three comparison children) Reliability for CP, no statistics similar findings to above trail; N=1.0 for 56% (0), n=6 children aged 11-27 months with DS (and twin comparisons)
Measurement error	Nil

² Methodological quality rated as: limited, moderate or strong. Statistical strength identified in brackets as, + good, 0 intermediate, - poor, ? unknown NOFT – Non-organic failure to thrive; CP – Cerebral palsy; DS – Down Syndrome

Inter-rater reliability was computed in studies using the kappa statistic and test-retest reliability established with video tapes (Reilly et al., 1995). The SOMA has therefore been shown to have satisfactory reliability. However, the inter-rater reliability in the current study was compromised as video recordings could not be completed, but used face-to-face observations by the same SLT, rather supporting intra-rater reliability.

The SOMA required greater infant compliance, thus one or all of (1) textures, (2) procedures, and (3) utensils were standardized. The SOMA had manuals providing sufficient detail to ensure consistency in their use (Benfer et al., 2012). Compared with the Video Fluoroscopic Swallowing study, the SOMA was determined to have 87.5% sensitivity, 66.6% specificity, 95.4% positive predictive value and 40% negative predictive value in the assessment of oral motor dysfunction (Ko et al., 2011). The SOMA has been shown to be valid and reliable for use as a complete measure to differentiate those with normal skills from clinically significant feeding difficulties and therefore increased the reliability and validity of the findings in the present study.

CHAPTER 3

3. ARTICLE

The following article was accepted for publication on 8 February 2020. The format of the article is that of the journal and differs from the rest of the dissertation.

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Feeding characteristics of infants in a lower-middle-income country

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Abstract

Aim: To describe feeding characteristics (such as breastfeeding and complementary feeding) and determine the nature of feeding difficulties of infants in a primary health care (PHC) in South Africa.

Method: Two hundred infants aged 6-12 months (mean=8.54, SD=2.18) received a feeding screening by a speech-language therapist (SLT) at a PHC in a semi-urban area using the Montreal Children's Hospital-Feeding Scale (MCH-FS). Children who failed screening underwent further clinical feeding evaluation using the Schedule of Oral Motor Assessment (SOMA).

Results: The sample consisted of 200 participants, most participants (n=174;87%) received breastfeeding, irrespective of their mothers' HIV-status. The longer the breastfeeding period the less likely parents were to show concern about infants' feeding (p=0.035). Complimentary feeding was introduced between 6 and 8 months (n=122;82%). The MCH-FS identified 13 participants with feeding difficulties (6.5%) of which 11 were diagnosed with oral motor dysfunction (OMD) using the SOMA. The 6.5% (n=13) that failed, had mild (n=8;61.5%), moderate (n=2;15.4%), and severe (n=3;23.1%) feeding difficulties, as reported by caregivers using the MCH-FS. The MCH-FS revealed that distraction during meals/following infants (n=42;21%), food refusal (n=31;15.5%), caregiver unease about feeding (n=29;14.5%), and problems with vomiting, gagging or spitting (n=28;14%), were characteristics of feeding in this sample. Participants in the age groups 6 (n=3;27.3%) and 10 months (n=3;27.3%) were prone to OMD.

Conclusions: The study was the first of its kind to describe the feeding characteristics of a group of infants during the transitional feeding stage in late infancy in South Africa. Important findings were the existence of OMD in eleven infants and feeding difficulties during transitional feeding in 13 infants. The study's findings may be used as a starting point for larger-scale studies in a similar setting, investigating the development of future caregiver education and health care professional training programmes regarding transitional feeding. Research endeavours by SLTs need to prioritise late infancy and transitional feeding in order to prevent possible difficulties arising from the sub-optimal caregiver feeding practices. The study may be valuable to all health care providers in primary health care.

Key words: Infant, feeding difficulties, feeding characteristics, oral-motor dysfunction, speech-language therapist (SLT).

Introduction

The World Health Organization (WHO) revealed that poor infant feeding is considered a risk factor for the survival of infants.² Infants' feeding skills mature within the first two years of life, being dependent on effective oral-motor functioning and sensory processing.⁴ Inappropriate feeding practices, such as early introduction of solids foods may affect infant growth and is associated with higher prevalence of feeding problems.⁵ Feeding experiences in the first year influence later eating habits and food preferences.⁶ Consequently, insufficient quantities, inadequate complementary foods (including consistency and texture of food), and poor infant feeding practices may negatively impact on health and development.³

Infant feeding guidelines were established by the WHO, the United Nations International Children's Emergency Fund, the American Academy of Pediatrics, and other professional bodies, highlighting the importance of nutritionally and age-appropriate feeding.^{2, 5, 7} Guidelines on optimal infant feeding recommend initiation of breastfeeding within one hour of birth, exclusive breastfeeding (EBF) for six months, followed by appropriate complementary feeding (CF) after six months along with continued breastfeeding for two years. EBF has been linked to numerous advantages, but only two-fifths of infants worldwide receive EBF for the first six months, and only two-thirds are introduced to solid foods in a timely manner.^{2, 7} Even with primary health care (PHC) clinicians advocating for EBF, inadequate infant feeding practices remain among both women with, and without HIV, in South Africa.⁸ In South Africa, 70% of infants receive inappropriate breastfeeding and CF, which may be linked to cultural and socio-economic factors.¹ HIV/AIDS, foetal alcohol spectrum disorder, preterm birth and low birth weight (LBW), and cerebral palsy, are risks associated with infant malnutrition

feeding difficulties, and poor survival in lower-middle-income countries (LMICs) such as South Africa.⁹ The high rate of malnutrition and its established link with poor infant feeding practices is not only exacerbated by poverty, but also influenced by delayed initiation of breastfeeding, early introduction of water and other liquids, and a delay in the introduction of CF.³ Globally, limited resources and unsupportive parent-infant relationships maintain inappropriate feeding practices and may contribute to under-nutrition in LMICs.^{1, 8} Caregiver-infant relationships and the intertwining influence of the socio-economic context and cultural milieu, shapes feeding practices, which may exacerbate unidentified feeding problems.^{1, 8}

Infant feeding difficulties may include inappropriate mealtime behaviours such as food refusal, self-feeding inadequacy, excessive mealtime duration, and food selectivity.^{4, 11} Three to 10% of infants presenting with early feeding and swallowing difficulties will develop severe feeding problems.¹² Many South African infants are exposed to environmental risks such as poverty, and as a result, an elevated prevalence of feeding and swallowing difficulties may be expected. Early identification is crucial in order to prevent delays in growth and/or development and to reduce caregiver stress.¹³

There is a dearth of literature on the nature of feeding and swallowing difficulties of infants in the PHC sector of South Africa.¹⁰ Local research efforts have been focused on the topic of breastfeeding, with little information available about late infancy and the introduction of CF during the period of transitional feeding.^{2, 3, 5} Investigating feeding characteristics of infants in the PHC may identify feeding practices that could be targeted in awareness campaigns as a preventive measure while timeous early intervention may be provided by SLTs to infants with feeding difficulties. Appropriate feeding practices and oral-motor skills are essential for optimal nutritional status, growth, development, and survival of infants. An improved understanding of the specific feeding characteristics of South African infants is necessary to develop tailor-made and contextually relevant preventative feeding interventions. The study aimed to describe the feeding characteristics and the nature of possible feeding problems in infants visiting a PHC clinic in South Africa.

Materials and Methods

A prospective descriptive, cross-sectional study within a quantitative framework of research design was used. Participants were selected using convenience sampling over a period of four months. Data were collected at a PHC clinic in a peri-urban area in Tshwane, Gauteng province, South Africa. The baby wellness clinic provides a holistic treatment approach for caregivers and infants, including immunization, family planning, HIV-treatment, and general health.

Institutional ethical clearance was obtained. Ethical clearance was granted from the Faculties of Humanities, at the University of Pretoria (reference number: GW20170112HS) as well as from the Tshwane Research Committee, of the Department of Health (project number: 16/2017). Caregivers of infants aged 6-12 months were approached participation and informed consent was obtained from caregivers who agreed to participate. No infants in the target age range were excluded. Caregivers (≥ 18 years) provided informed consent on behalf of infants.

A speech-language therapist (SLT) evaluated study participants using the Montreal Children's Hospital-Feeding Scale (MCH-FS). The MCH-FS consists of 14 items covering important feeding domains with some overlap: oral motor, oral sensory, appetite, maternal strategies used and family reactions to their child's feeding.¹² The MCH-FS determined, according to caregivers' report, which domains of feeding, if any were hindered. The scoring sheet allows quick conversion of raw scores into T-scores and classification of feeding difficulties as mild, moderate or severe.¹⁴ A pass/fail was determined by the researcher based on raw scores. Participants who passed (raw score 14-45), were followed-up by the clinic. Participants who failed (raw scores 46-98), were assessed using the Schedule of Oral Motor Assessment (SOMA)¹⁴ to investigate the nature of feeding difficulties using various food consistencies and utensils.¹⁵ The SOMA entailed the standardized presentation of a variety of tastes and textures such as puree, semi-solids, solids, and liquids, by the use of a bottle, training cup and a cup.¹⁵ The type of food presented to infants during the SOMA was dependent on the age and preference of the infant. Food items used for the feeding assessment were adapted to suit the South African PHC context (Table 1). Ratings were made from face-to-face observations, enabling the categorization of oral motor function as normal or as abnormal. Each of the oral motor categories can be described on three levels as depicted in Figure 1.¹⁵ The MCH-FS and SOMA were both administered in English. Permission was granted to peruse clinic files and interview caregivers for demographic information and infant feeding history.

Table 1 Food types used during the SOMA¹⁴

Consistency	SOMA food	Food used in the study
Puree	Chocolate mouse	Thick yoghurt
	Fromage frais or thick yoghurt	
	Pureed fruit	
Semi-solid	Plain cottage cheese	Soft porridge
	Petit pois (baby peas, warm or cold according to preference)	Mashed banana
Solid	Potato salad	Butternut and sweet potato cubes
	Fruit cocktail in pure fruit juice	Dried apricot
	Mixed fruit (apple/apricot/pear)	
Cracker	Crispbread or cheese snack biscuits	<i>Marie</i> biscuit
	Savoury crackers or digestive biscuits	<i>Lady finger</i> biscuit
	Oat cakes or gingernut-biscuits	<i>Nuttikrust</i> biscuit

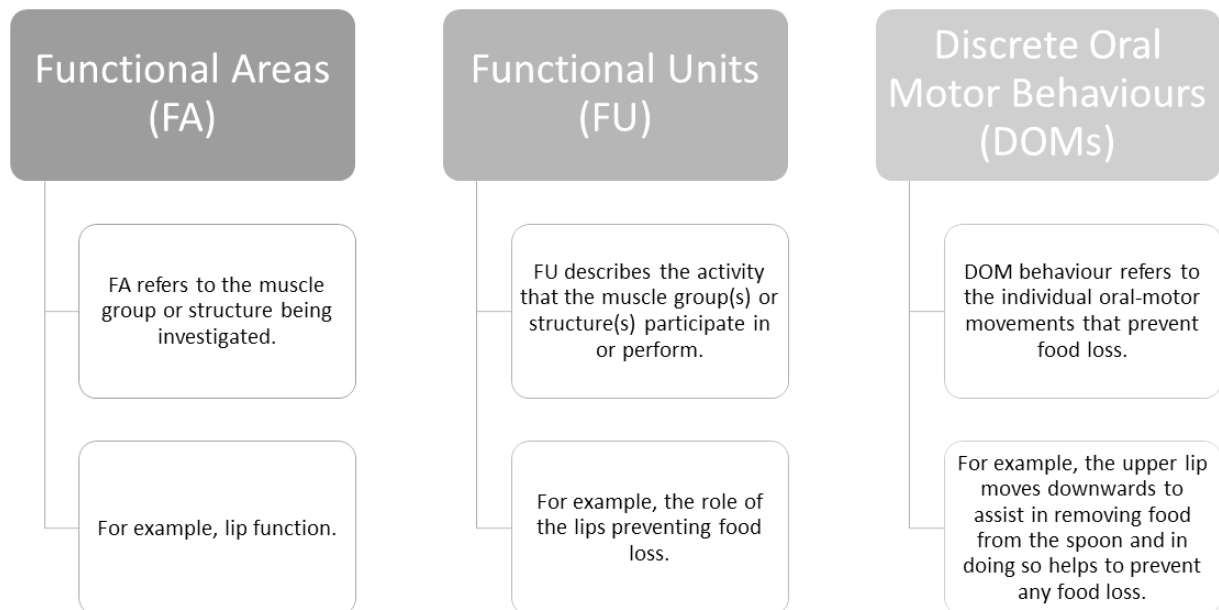


Figure 1 SOMA oral motor categories (Reilly et al., 1995)

Statistical analysis was conducted using IBM SPSS Statistics version 23 (Released 2015, IBM CORP, Armonk, New York). Descriptive statistics and analyses of variance were conducted as appropriate. Parametric variables were compared with a 2-tailed t-test and presented as the mean and standard

deviation (SD) unless stated otherwise. Categorical variables were compared by 2-tailed Fishers exact or Chi-square test. Statistical significance was accepted as $p \leq 0.05$.

Results

The sample consisted of 200 participants, of which none were excluded. Caregivers were mainly black (n=199;99.5%) and speaking Sepedi, a local language (n=78;39%). The majority of infants were cared for by their mothers (n=183;91.5%), most of whom had a Grade 11- to 12 education level (Table 2).

Table 2 Caregiver characteristics

Characteristics	n	Frequency	Percentage (%)
Primary caregiver	200		
Parents		185	92.5
Grandparents		9	4.5
Other		6	3
Home language	200		
Sepedi		78	39
Sesotho		28	14
IsiZulu		27	13.5
Other		19	9.5
Xitsonga		14	7
Setswana		12	6
Shona		10	5
Population group	200		
Black		199	99.5
Coloured		1	0.5
Education mother	200		
Gr 11-12		154	77
Postgraduate		25	12.5
Gr 10		21	10.5
Mother age (years)	198		
18-34 years		166	83.8
>35 years		30	15.2
<18 years		2	1

Table 2 Caregiver characteristics continued

Characteristics	n	Frequency	Percentage (%)
Number of children	200		
1-2		142	71
≥3		58	29
Housing status	198		
Informal		128	64.7
Own		70	35.4
Number of people in the household	199		
1-4		105	52.8
5-10		92	46.2
>10		2	1

Almost a third of the infant participants were 6 months old (n=58;29%) and the gender distribution was similar with 51% (n=102) males and 49% (n=84) females (Table 3).

Table 3 Infant characteristics

Characteristics	n	Frequency	Percentage (%)
Gestational age (weeks)	199		
39-44		152	76.4
28-38		47	23.6
HIV-exposed	200		
Yes		36	18
HIV-status	200		
Negative		189	94.5
Unknown		9	4.5
Positive		2	1
HIV treatment	200		
Yes		13	6.5
Day-care	199		
Yes		34	17.1
Neonatal feeding difficulties	20		
Yes		11	5.5
Hospital stay after birth?	200		
Yes		24	12

Table 3 Infant characteristics continued

Characteristics	n	Frequency	Percentage (%)
Reason for hospital stay	24		
Jaundice		7	29.2
Other		4	16.7
Preterm birth		3	12.5
LBW		3	12.5
Multiple complications		3	12.5
RDS		2	8.3
HIE		2	8.3
Tube feeding	200		
Yes		7	3.5
Type of tube feeding	7		
Orogastric		3	42.9
Both		3	42.9
Nasogastric		1	14.3
Period of tube feeding	7		
2 weeks		3	42.9
<1 week		2	28.6
1 week		1	14.3
3 weeks		1	14.3

† RDS, respiratory distress syndrome; HIE, hypoxic ischaemic encephalopathy; HIV, human immunodeficiency virus; LBW, low birth weight.

Risks for feeding difficulties found in the sample, included preterm birth (23.5%), HIV-exposure (18%), feeding tubes during the neonatal stage (3.5%), and parental reports of neonatal feeding difficulties (5.5%). Eighteen percent (n=36) were HIV-exposed, but only 1% (n=2) had a confirmed HIV-positive status. Twelve percent (n=24) had a history of neonatal hospital stay after birth, with jaundice being the most common cause (n=7;29.2%).

Most participants were breast fed (n=174;87%), of whom 85% (n=170) received colostrum, and 93.1% (n=163) received breast milk directly from the breast. For caregivers expressing breast milk, 91.7% (n=11) used a bottle and 8.3% (n=1) used cup feeding. Most participants (n=161;80.9%) did not have breastfeeding difficulties. Infant participants were breastfed for a mean duration of 7.5 months

(SD=2.8), with most caregivers breastfeeding for longer than six months (n=94;53.7%). The majority of participants were introduced to solids between six- and eight months (n=122;82%), while some were introduced slightly early (15 participants [10%] at five months) or somewhat later (over nine months of age; n=11;7%). The most common consistencies of food consumed by the six-month-old participants were puree, semi-solids and liquids (n=55;10.2%), and for the seven to 12-month-old participants; puree, semi-solids, solids, crackers, and liquids (n=142;72.1%). Vegetables (n=64;43.5%) and porridge (n=38;25.8%) were the solids mostly presented. The preferred feeding method was a spoon (n=137;92.6%) as opposed to mothers' hands (n=11;7.4%).

The number of people in the household (Table 1) was significantly associated with infants being cup/bottle fed; the more people in the household, the higher the likelihood that participants were cup/bottle fed (p=0.05). More infants were fed using bottles (p=0.003) or cups (p=0.02) when primary caregivers were employed.

All participants' feeding were screened using the MCH-FS (Table 4), revealing a pass rate of 93.5% (n=187). The 6.5% (n=13) that failed, were identified as having mild (n=8;61.5%), moderate (n=2;15.4%) and severe (n=3;23.1%) feeding difficulties as reported by caregivers. The age distribution for failing the MCH-FS revealed that three participants were 6 months old, one was 8 months, two were 9 months, three were 10 months, one 11 months, and three were 12 months of age. Apart from those who failed, 29 (14.5%) caregivers had concerns about their infants' feeding, 31 (15.5%) reported that their infants refused food at the beginning of meals and 28 (14%) reported problems with vomiting, gagging or spitting. Parental concerns (n=13;46.6%) were most often due to an infant not gaining weight. The longer the breastfeeding period the less likely parents were to show concern about infants' feeding (p=0.035).

Table 4 Feeding characteristics according to the MCH-FS

Characteristics	n	Frequency	Percentage (%)
Mealtimes	200		
Easy		177	88.5
Very difficult		23	11.5
Concern	200		
No concern		171	85.5
Very concerned		29	14.5

Table 4 Feeding characteristics according to the MCH-FS continued

Characteristics	n	Frequency	Percentage (%)
Appetite	200		
Never hungry		15	7.5
Good appetite		185	92.5
Refusal during meals	200		
At the beginning		31	15.5
At the end		169	84.5
Duration of meals	200		
1-30 min		191	95.5
>30 min		9	4.5
Behaviour	200		
Behaves well		181	90.5
Acts up, fusses		19	9.5
Gag/-spit/-vomit	200		
Never		172	86
Most of the time		28	14
Hold food in the mouth	200		
Most of the time		13	6.5
Never		187	93.5
Distract or follow the child to get them to eat	200		
Never			
Most of the time		158	79
		42	21
Force the child to eat	200		
Most of the time		22	11
Never		178	89
Chewing	200		
Good		190	95
Very poor		10	5
Growth	200		
Growing poorly		5	2.5
Growing well		195	97.5

Table 4 Feeding characteristics according to the MCH-FS continued

Characteristics	n	Frequency	Percentage (%)
Your relationship during feeding	200		
Very negatively		8	4
Not at all		192	96
Family relationship during meals	200		
Not at all		192	96
Very negatively		8	4
Difficulty during meals	13		
Mild		8	61.5
Moderate		2	15.4
Severe		3	23.1
Pass or fail	200		
Pass		187	93.5
Fail		13	6.5

The SOMA (Table 5) was conducted with 13 participants who failed the MCH-FS. Eleven participants presented with oral motor dysfunction (OMD) on the SOMA. Four participants presenting with OMD when eating purees showed difficulty with smooth sequenced chewing actions, lip movements, and insufficient opening of the jaw, and had tongue protrusion throughout chewing. Two participants (15.3%) presented with OMD when eating semi-solids and displayed difficulties with initiation and sequencing of chewing. Three participants (25%) presented with OMD when eating solids, and had difficulty controlling jaw, tongue and lip movements. Only one participant, presented with OMD when eating a cracker. This participant had difficulty with food loss, initiation of chewing, poor lip control, tongue lateralization and rotary jaw movements. The participant had no attempt to bite the biscuit, had inadequate strength and showed poorly graded jaw opening. One 6-month old, presented with OMD when drinking from a bottle. This participant had difficulty with sequenced chewing, poor lip closure, poorly controlled and large vertical jaw excursions when drinking from a bottle. Twelve participants refused to drink from a cup. Participants in the 6 (n=3) and 10-month age category (n=3) were more prone to OMD.

Table 5 Feeding characteristics based on the SOMA

Characteristics	n	Frequency	Percentage (%)
Puree	13		
Oral motor dysfunction		4	30.8
Oral motor function		9	69.2
Refused			
Semi-solid	13		
Oral motor dysfunction		2	15.4
Oral motor function		10	76.9
Refused		1	7.7
Solid	13		
Oral motor dysfunction		3	25
Oral motor function		4	33.3
Refused		5	41.7
Cracker	13		
Oral motor dysfunction		1	7.7
Oral motor function		12	92.3
Refused			
Bottle	7		
Oral motor dysfunction		1	14.3
Oral motor function		6	85.7
Refused			
Trainer cup	7		
Oral motor dysfunction		6	85.7
Oral motor function		1	14.3
Refused			
Cup	12		
Oral motor dysfunction			
Oral motor function			
Refused		12	100
Total	13		
Oral motor dysfunction		11	84.6
Oral motor function		2	15.4

In the entire sample, solids (n=122;82.4%) and cup drinking (n=60;58.7%) were mostly introduced between six to eight months. The method of eating solids (by spoon or hand) was significantly associated with participants' exposure to cup feeding (p=0.010).

Discussion

The purpose of the study was to determine the feeding characteristics of infants in a PHC in South Africa, as well as to investigate the nature of possible feeding problems identified in this population. The findings revealed 13 (6.5%) participants with feeding difficulties of which 11 (5.5%) were diagnosed with OMD. Characteristics associated with feeding difficulties uncovered by the MCH-FS included, distraction during meals/following infants (n=42;21%), food refusal (n=31;15.5%), caregiver unease about feeding (n=29;14.5%), and problems with vomiting, gagging or spitting (n=28;14%). The feeding characteristics revealed by the current study can help to identify problematic feeding practices currently being used by caregivers. Feeding difficulties encountered by this sample can be used by SLTs to improve caregivers' knowledge and understanding in awareness campaigns as a preventative measure.

Most participants (n=174;87%) received at least some breastfeeding, whether it was EBM or direct breastfeeding irrespective of their mothers' HIV-status. A possible explanation could be the caregiver's responsibility to return to work (n=51), which may have resulted in caregivers not being able to directly breastfeed, relying on alternative feeding methods. A recent South African study¹⁹ reported a slightly lower breastfeeding rate (76.5%) than the current study. In contrast, another South African study revealed a higher breastfeeding rate (95%).^{9, 10} This is a positive finding as the breastfeeding rates are closer to the national guideline, promoting EBF.^{8, 1} The average breastfeeding duration was 7.5 months (n=94;53.7%). This finding was similar to the mean duration of 7.1 months reported in the United States (US).⁵ This US research found an association between breastfeeding duration and the age at which solids were introduced, while the current study found no association.

CF was introduced between six and eight months (n=122;82%), which is similar to those by Mushapi et al.¹ who found 70% of the sample were introduced to CF, although it was inappropriate CF. The puree, semi-solids and liquids, in the study was introduced at the appropriate age of 6 months (n=55;10.2%), in contrast to a Tanzanian study introducing as early as three to-five months of age.¹⁰ The most common first foods were vegetables and porridge, contrary to the low nutrient density and cereal-based foods found in other studies.¹ The local culture and food available play a role in determining the CF presented to infants seeing as the participants of the present study reside in an

LMIC.⁶ Cup drinking was introduced between six to eight months (n=60;57.7%), as opposed to nine months (74%) as noted in a German study.²⁰ Results of previous studies showed that early introduction of CF was related to lower maternal age, lower education, higher birth weight, and infant gender⁶, but the present study found no association. In the current study, the majority of mothers were educated and over 18 years of age, possibly explaining why CF was appropriately introduced in this sample.

Although findings may not be generalised to other communities in South Africa, the results of the study found that participating families introduced their infants appropriately to CF and attempted to provide EBF in accordance with national guidelines, indicating that mothers receive appropriate guidance at this specific PHC during well-baby visits. A recent study found that PHC clinicians focus predominantly on the promotion of EBF, with less emphasis on feeding milestones and CF, which can shed some light on the findings of the current study.⁸ Additionally, infants may refuse food and still maintain adequate growth and development, by drinking sufficiently or eating large amounts of selected or preferred foods.¹⁶ It is important for PHC clinics in LMICs to expand their weight/growth based focus, to include age-appropriate feeding skills and complimentary foods when educating caregivers at well-baby clinics.

Interestingly, caregivers' unease about their infants' feeding (n=29; 14.5%), revealed by the MCH-FS was one of the feeding characteristics that stood out. The current study showed that parents may not have been aware of underlying characteristics of feeding difficulties until probed by the researcher using the MCH-FS. It is essential to establish what the caregivers' and the community's perspective is regarding typical infant feeding and the presence of feeding difficulties. Caregivers may, for example, view certain behaviours (e.g. distracting/following child around, or food refusal) as an acceptable characteristic of typical feeding development, while this study found it to be a characteristic of a possible feeding difficulty. SLTs and the PHC setting should improve caregivers' awareness of age-appropriate feeding. Increasing caregiver knowledge on typical feeding milestones, and red flags for feeding problems, may result in improved identification of feeding difficulties early on, as caregivers would discuss their concerns during well-baby visits at PHC clinics.

A mere 11 participants were diagnosed with OMD, of which infants aged six months (n=3;27.3%) and 10- months (n=3;27.3%) were most likely to present with OMD. An infant's transition to solid foods around six months of age may be a contributing factor, as it exposes them to new flavours, food textures and requires the mastering of new oral motor skills.^{13,17} Another transition occurs around 10 months as infants transition to food that requires chewing an advanced skill, explaining this finding.¹⁷

The SOMA revealed poor control and manipulation of food, with ineffective bolus formation in 11 participants. These participants may require food to be modified from its original form or may rely on a natural variant that is not age-appropriate.¹¹ This finding shows a need for early identification of OMD and feeding difficulties during late-infancy at well-baby visits. Appropriate and well-timed sensorimotor feeding intervention may prevent severe feeding problems and its consequences, later in childhood.¹¹ A recent study found that low levels of caregiver knowledge on infant development were correlated with poor infant developmental outcomes.¹⁸ Therefore, it may be valuable for SLTs to coach caregivers and advocate for appropriate transitional feeding. SLTs need to support parents and families, and guide healthcare workers and the community on the typical acquisition of oral motor skills and feeding milestones that are expected during transitional feeding (Eales., 2018). Further research exploring caregivers' awareness of age-appropriate feeding milestones and foods may be warranted.

The study had a substantial sample size of 200 participants covering a small age cohort. There were no participants excluded from the study, thus in addition to the use of an interpreter and translated documentation, the sample included the diverse population attending this PHC setting. It should be noted that the MCH-FS and SOMA were not developed for a LMIC, and therefore the findings have to be interpreted with caution. Future research should aim to purposefully adapt and validate the MCH-FS and SOMA for the South Africa, a LMIC context.

Conclusion

The study was the first of its kind to describe the feeding characteristics of a group of infants during the transitional feeding stage in late infancy in South Africa. Important findings were the existence of OMD in eleven infants and feeding difficulties during transitional feeding in 13 infants. The study's findings may be used as a starting point for larger-scale studies in a similar setting, investigating the development of future caregiver education and health care professional training programmes regarding transitional feeding. Research endeavours by SLTs need to prioritise late infancy and transitional feeding in order to prevent possible difficulties arising from possible sub-optimal caregiver feeding practices. The study may be valuable to all health care providers in PHC settings.

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CHAPTER 4

4. IMPLICATIONS AND CONCLUSIONS

4.1. CHAPTER AIM AND OUTLINE

The purpose to this chapter is to discuss the main findings of this study by elaborating on both the theoretical and clinical implications of the study. Furthermore, the study limitations and future research directions are discussed. The chapter ends with a few concluding statements to summarise the main findings of the study.

4.2. DISCUSSION OF MAIN RESULTS OF THE STUDY

The purpose of the study was to determine the feeding characteristics of infants in a PHC in South Africa, as well as to explore the nature of possible feeding problems identified in this population. Most participants (n=174;87%) received at least some breastfeeding, whether it was expressed breast milk or direct breastfeeding irrespective of their mothers' HIV-status. The average breastfeeding duration was 7.5 months (n=94;53.7%). CF was introduced between six and eight months (n=122;82%). The puree, semi-solids and liquids in the study was introduced at the appropriate age of six months (n=55;10.2%). The most common first food were vegetables and porridge. Cup drinking was introduced between six to eight months in the majority of the sample (n=60;57.7%). These findings are well aligned with the national and international recommended guidelines (Grote et al., 2016; Klag et al., 2015; Saldan, Venancio, Saldiva, & Mello, 2016; Tiwari et al., 2016; UNICEF, 2017).

Thirteen participants had feeding difficulties (6.5%) of which 11 (5.5%) were diagnosed with OMD. The MCH-FS revealed that distraction during meals/following infants (n=42;21%), food refusal (n=31;15.5%), caregiver unease about feeding (n=29;14.5%), and problems with vomiting, gagging or spitting (n=28;14%), were prominent characteristics of feeding in this sample (see Figure 4). The SOMA revealed poor control and manipulation of food, with ineffective bolus formation in 11 participants. From this group of participants presenting with OMD, infants aged six months (n=3;27.3%) were more likely to present with OMD.

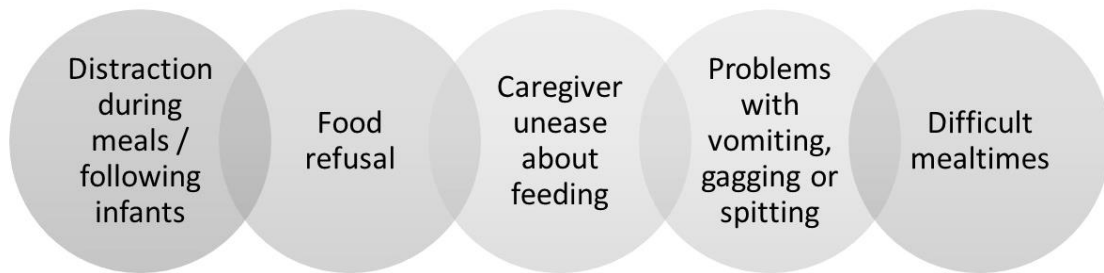


Figure 4 Common problems during meals as reported by caregivers

4.3. THEORETICAL AND CLINICAL IMPLICATIONS OF THE STUDY

There is a dearth of literature on the nature of feeding difficulties of infants in a PHC in South Africa (Vitta et al., 2016). The feeding characteristics of the sample in the current study can help to identify problematic feeding practices currently being used by caregivers. The feeding difficulties encountered by this sample can be used by SLTs to improve caregivers' knowledge and understanding in awareness campaigns as a preventative measure. SLTs are uniquely qualified to provide information about feeding and swallowing and will therefore deem the findings valuable.

Interestingly, caregivers' unease about their infants' feeding ($n=29;14.5\%$), revealed by the MCH-FS, was one of the feeding characteristics that stood out. The current study showed that parents may not have been aware of underlying characteristics of feeding difficulties until probed by the researcher using the MCH-FS. It is important to establish what caregivers' and the community's perspective is regarding normal infant feeding and feeding difficulties. Caregivers may, for example, view certain behaviours (e.g. distracting/following child around or food refusal) as an acceptable characteristic of typical feeding development, while this study found it to be a characteristic of a possible feeding difficulty. SLTs should improve caregiver awareness of age-appropriate feeding so that families may identify difficulties when they arise (Eales, 2018). Thus, increasing caregiver knowledge on typical feeding milestones, and red flags for feeding problems, may result in improved identification of feeding difficulties early on, as caregivers would then discuss their concerns during well-baby visits at PHC clinics.

The findings of the study showed that it may be valuable to include screening of feeding development at regular intervals during scheduled well baby visits according to a national standard (Figure 5). During these well-baby visits at PHC clinics have an ideal opportunity to implement routine screening of feeding and swallowing in infants. Research in the PHC setting revealed that early communication screening may create an opportunity for other preventative strategies to occur (Van der Linde,

Kritzinger, & Redelinghuys, 2009). Therefore, it can be assumed that early feeding screening may be beneficial to awareness programs targeting early intervention of communication and feeding skills. However, this aspect requires further research.

SLTs may be involved in awareness campaigns, caregiver and staff training programmes in the PHC sector. SLTs may participate in primary prevention strategies such as monthly group information sessions while caregivers are waiting at well-baby immunization clinics (Eales, 2018). The monthly sessions may provide information about identification of OMD and feeding difficulties during these group sessions, while caregivers may be able to identify areas of concern and raise their unease with PHC staff. Once infants are identified for further evaluation, the SLT may then provide comprehensive services to assist in assessing and intervening appropriately to prevent further secondary complications (ASHA, 2008). The importance of early intervention and the cumulative affect it may have on ameliorating environmental risks in LMICs such as South Africa, has been emphasized previously (Eales, 2018). Further research is necessary to develop standardized awareness and identification programmes for the PHC sector.

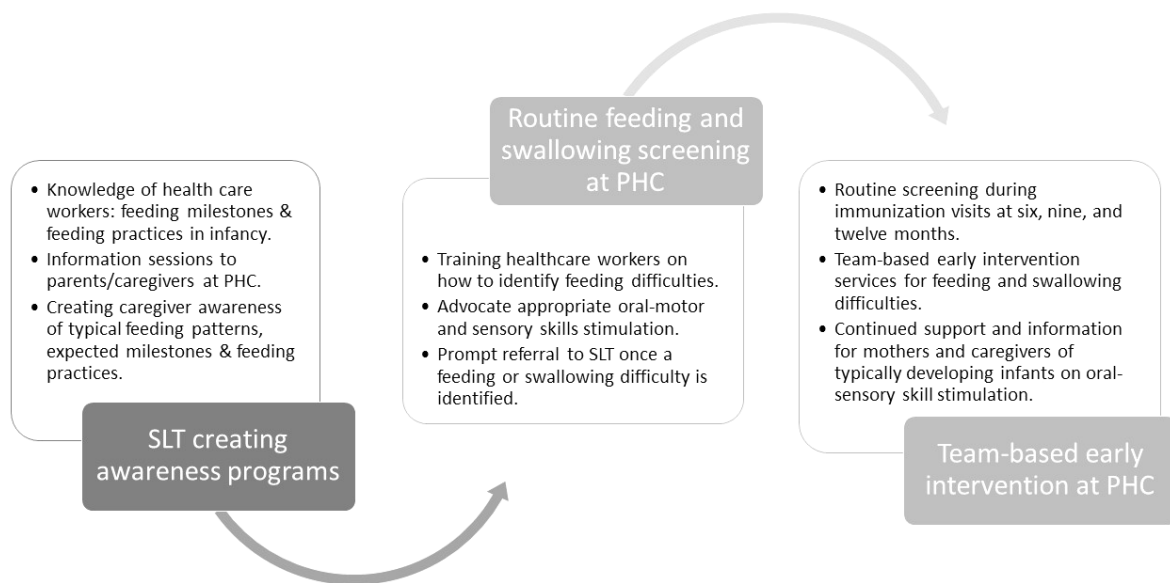


Figure 5 Early intervention for infant feeding in PHC

The biggest portion of the sample was six months of age, which is an important milestone for infants transitioning from bottle or breastfeeding to the introduction of solids. Transitional feeding skills emerge in typically developing infants by about six months of age, at which time spoon feeding may be introduced. It is a critical period for expanding an infant’s diet using a variety of flavours and textures, especially foods requiring chewing (Arvedson, 2008). Most children have difficulty in learning

specific oral movements if a variety of textures are introduced only after 10 months of age, children are more likely to refuse solids (Arvedson, 2008). Therefore, it may be valuable for SLTs to coach caregivers and advocate for appropriate transitional feeding. SLTs need to support parents and families, and guide healthcare workers and the community on the typical acquisition of oral motor skills and feeding milestones that are to be expected during transitional (Arvedson, 2008; Eales, 2018). Providing caregivers with skills and knowledge to identify delays in feeding development, and to whom to refer to for further treatment, should form part of the SLT's responsibility (Eales, 2018). Recommendation for stimulation and encouragement of oral motor and sensory skills should ideally also be incorporated into infants' Road to Health Booklets, the local growth monitoring tool, and information caregivers receive at immunization clinics. Further research initiatives to investigate the development of suitable training programs for the PHC staff and caregivers is warranted.

A challenge for infants with feeding difficulties is the weight/growth and development, by drinking sufficiently or eating large amounts of selected or preferred foods (Borowitz & Borowitz, 2018). Infants at risk of feeding difficulties as a result of exposure to environmental risks, should receive screening services during immunization visits at six, nine, and twelve months of age (National Institute for Communicable Disease, 2016). The Road to Health Booklet was intended to monitor growth, and development, but it falls short (Van der Linder et al., 2015). It would be valuable if the Road to Health Booklet could include feeding and swallowing milestones and recommendations for stimulation of oral motor and sensory exploration.

4.4. CRITICAL EVALUATION OF THE STUDY

Strengths of the study

The study had a substantial sample size of 200 participants. Although a larger sample may have increased the generalisability of the findings, valuable conclusions could be drawn from this sample. As the sample size increases, the confidence in the studies estimate increases, uncertainty decreases presenting with greater precision (Leedy & Omrod, 2015). The study covered a small cohort (six months age range). There were no participants excluded from the study. The researcher made use of an interpreter and translated the documentation for the caregivers to Sepedi and isiZulu, ensuring that the sample included the diverse population attending this PHC setting who may not have been proficient in English. The data-collection instruments namely MCH-FS and SOMA have been proven to have good reliability and validity and therefore increased the present study's reliability and validity (Ko et al., 2011; Reilly et al., 1995).

Limitations of the study

The MCH-FS was validated on English, French and Dutch populations, while the current study was based in a LMICs (Sanchez et al., 2015). Although the MCH-FS was selected because of its reliability and validity, the study was the first of its kind in South Africa using the tool to screen infants in research, and therefore findings have to be interpreted with caution. Future research should aim to purposefully adapt and validate the MCH-FS and SOMA for the South African population, a LMIC setting (Moor, Didden, & Korzilius, 2007).

4.5. RECOMMENDATIONS FOR FUTURE RESEARCH

Considering that the MCH-FS and SOMA were validated with populations in higher -income -countries, it would therefore be beneficial for future research to validate these tools in a LMIC setting integrating local caregiver knowledge and adapting it to local cultures' perspectives on infant feeding. The MCH-FS cut off score of 45 was adapted in the Thai version and a more recent Polish version to 40 and 46 respectively (Benjasuwantep, Rattanamongkolgul, & Ramsay, 2015; Bąbik, Dziejczak, Horvath, & Ostaszewski, 2019). It would be beneficial to establish an appropriate cut off score for the MCH-FS in a South African context. Further research should investigate which foods would be culturally and economically appropriate for use with the SOMA in South Africa. Although the SOMA foods were adapted for the LMIC population, some of the infants refused the food as it was still unknown to them. The possibility of compiling and presenting early feeding and swallowing intervention and awareness campaigns for staff and caregivers, require further research to develop standardized programmes for the PHC sector.

4.6. CONCLUSION

The study was the first of its kind to describe the feeding characteristics of a group of infants during the transitional feeding stage in late infancy in South Africa. Important findings were the existence of OMD in eleven infants and feeding difficulties during transitional feeding in 13 infants. The study's findings may be used as a starting point for larger scale studies in a similar setting, investigating the development of future caregiver education and health care professional training programmes regarding transitional feeding in order to prevent possible difficulties arising from sub-optimal caregiver feeding practices. The study may be valuable to all health care providers in primary health care.

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APPENDICES

APPENDIX A ETHICAL CLEARANCE LETTER FROM FACULTY OF HUMANITIES RESEARCH ETHICS COMMITTEE

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APPENDIX G BACKGROUND PARTICIPANT AND FAMILY INFORMATION QUESTIONNAIRE

APPENDIX H THE MONTREAL CHILDREN'S HOSPITAL – FEEDING SCALE (MCH-FS)

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APPENDIX L DEVELOPMENTAL SPEECH AND FEEDING MILESTONE HANDOUTS

APPENDIX M PROOF OF ACCEPTANCE TO THE JOURNAL OF PEDIATRICS AND CHILD HEALTH

APPENDIX A ETHICAL CLEARANCE LETTER FROM FACULTY OF HUMANITIES RESEARCH ETHICS COMMITTEE



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Research Ethics Committee

30 January 2017

Dear Prof Vinck

Project: Prevalence and nature of feeding problems in infants in primary health care
Researcher: N Fuls
Supervisor: Dr J van der Linde
Department: Speech-Language Pathology and Audiology
Reference Number: 29070857 (GW20170112HS)

Thank you for the application that was submitted for ethical consideration.

The **Research Ethics Committee** reviewed the above application on 26 January 2017, and approval is pending a clarification on the following comments:

- Permission is outstanding from the Tshwane Research Committee (TRC). The introductory letter requesting permission from the TRC is also required.
- Permission is outstanding from the Stanza Bopape Clinic for:
 - a) The use the clinic as a research site
 - b) Access to the participants' Road to Health charts. The initial introductory letter requesting permission from the clinic must be revised to also request permission to access the participants' charts.
- The letters of informed consent must be revised to include information on data storage and use for further research. The letters must also be language edited.
- The Committee recommends that the researcher find an alternate method to recruiting participants.

Please note that data collection may not commence prior to the above issues be addressed to the satisfaction of this Committee. Please submit a letter clarifying how the above issues will be addressed, together with any revised documents that would arise from this, at your earliest convenience, to: Ms Tracey Andrew at tracey.andrew@up.ac.za / Room HB7-27.

Sincerely

Prof Maxi Schoeman
Deputy Dean: Postgraduate Studies and Ethics
Faculty of Humanities
UNIVERSITY OF PRETORIA
e-mail: tracey.andrew@up.ac.za

Research Ethics Committee Members: Prof KL Harris (Acting Chair); Dr L Blokland; Dr R Fasselt; Ms KT Govinder Dr E Johnson; Dr C Panebianco; Dr C Puttergill; Dr D Reyburn; Mr V Sithole; Prof GM Spies; Prof E Taljard; Ms B Tsebe, Dr E van der Klashorst

APPENDIX B ETHICAL CLEARANCE LETTER FROM TSHWANE RESEARCH COMMITTEE



Kuyasheshwa! Gauteng Working Better

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

427 Hilda Street, 4th floor, The Fields Building, Hatfield Pretoria 0001 South Africa. Tel: +27 12 451 9036
Enquiries: Dr. Lufuno Razwiedani
e-mail: lufuno.razwiedani@gauteng.gov.za

TSHWANE RESEARCH COMMITTEE

CLEARANCE CERTIFICATE

Meeting: N/A

PROJECT NUMBER: 16/2017

Title: Prevalence and nature and feeding problems in infants in primary health care

Researcher: Ms Nichole Fuls

Supervisor: Dr J Van der Linde

Department: Speech-Language Pathology and Audiology

Facility/Hospital: Stanza Bopape Clinic

DECISION OF THE COMMITTEE


Approved

NB: THIS OFFICE REQUESTED A FULL REPORT ON THE OUTCOME OF THE RESEARCH DONE

Date: 27 February 2017


.....
Dr. Lufuno Razwiedani

Chairperson: Tshwane Research Committee
Tshwane Health District


.....
Mr. Pitsi Mothomone
Chief Director: Tshwane District Health
Tshwane District

NOTE: Resubmission of the protocol by researcher(s) is required if there is departure from the protocol procedures as approved by the committee.

APPENDIX C PARENT/CAREGIVER INFORMATION LEAFLET AND INFORMED CONSENT FORM



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Department of Speech-Language Pathology and Audiology

7 February 2017

Dear Parent/ caregiver

TITLE OF STUDY: Prevalence and nature of feeding problems in infants in primary health care

Researcher: Nichole Fuls

Contact number: 072 929 0036

1) INTRODUCTION

I would like to invite you and your baby to participate in a research study. This information leaflet will help you to decide if you want your baby to participate. Before you agree to take part you should fully understand what is involved. If you have any questions that this leaflet does not fully explain, please do not hesitate to ask the researcher Nichole Fuls.

2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of this study is to determine the number of infants presenting with feeding problems and the nature of the feeding problems they present with. You as a parent/ caregiver can give important information about your baby's feeding, growth, and learning.

3) EXPLANATION OF PROCEDURES TO BE FOLLOWED

This study involves an interview with you, to ask questions about your baby's growth, learning, and feeding. We will ask you some questions about your baby's feeding and general development. We will weigh your baby and measure their length to evaluate their growth. We will observe his/her feeding with different types of food.

4) RISK AND DISCOMFORT INVOLVED

There are no risks in participating in the study. The interview process may take some of your time. Some of the questions we are going to ask you may make you feel uncomfortable, but you do not need to answer them if you don't want to. The interview and assessment of your baby's feeding will take about 30 minutes of your time and will not influence your usual care at the clinic. Your baby might need to eat foods they don't usually like to eat but they will not be forced if they don't like it.

5) POSSIBLE BENEFITS OF THIS STUDY

You may benefit directly from the study because we will give you support and guidance to help your baby with feeding. There will be no other direct benefit for you. However, the results of the study will help us in finding feeding problems early so that we can give the right care and support to babies with feeding problems in the future.

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Tel: 012 420 2948
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6) WHAT ARE YOUR RIGHTS AS A PARTICIPANT?

Your participation in this study is entirely voluntary. You can say no to participate or stop at any time during the study without giving any reason. If you decide to stop, your baby's care at the clinic will not be affected.

7) HAS THE STUDY RECEIVED ETHICAL APPROVAL?

This study has received approval from the Faculty of Humanities, University of Pretoria as well as from Tshwane Research Committee, Department of Health.

8) INFORMATION AND CONTACT PERSON

The contact person for the study is **Nichole Fuls**. If you have any questions about the study please contact her at **072 929 0036**. Alternatively, you may contact the supervisors Mrs. Esedra Krüger (012 420 4910) and Dr. Jeannie van der Linde (012 240 2948).


9) COMPENSATION

Your participation is voluntary. You will not be paid to take part in this study.

10) CONFIDENTIALITY

All information that you give will be kept private and confidential. Your name and any details that may identify you as a person will not be used in the report at the end of the study. Research reports and articles in scientific journals will not include any information that may identify you or your baby or the clinic. The information will be securely stored, for a minimum of 15 years at the Communication Pathology Building, University of Pretoria.

Kind regards,



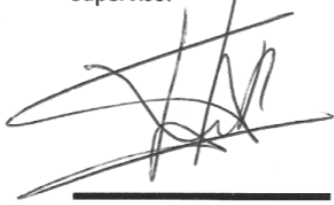
Ms. N Fuls
Masters student



Dr. J Van Der Linde
Supervisor



Mrs. E Krüger
Supervisor



Prof. B Vinck
HEAD: Dept. of Speech-Language
Pathology and Audiology

CONSENT TO PARTICIPATE IN THIS STUDY

I confirm that the person asking my consent to take part in this study has told me about what kind of study this is, the process, the risks, the discomforts, and the benefits of the study. I have also received, read and understood the above-written information (Information Leaflet and Informed Consent) about the study. I am aware that the results of the study, including personal details, will be kept private and confidential. I am participating willingly. I have had time to ask questions and have no problem to participate in the study. I understand that there is no penalty should I wish to no longer take part in the study and will not affect access to treatment in any way.

I have received a signed copy of this informed consent agreement.

Participant's name(Please print)

Participant's signature: Date.....

Investigator's name(Please print)

Investigator's signature Date.....

Witness's Name.....(Please print)

Witness's signature Date.....

Please indicate whether you give permission that the data may be used for future research. Herewith I give consent that the data obtained in the current study may be used for future research as well.

Yes No

(Please tick the relevant block)

VERBAL INFORMED CONSENT

I, the undersigned, have read and have fully explained the participant information leaflet, which explains the nature, process, risks, discomforts and benefits of the study to the participant whom I have asked to participate in the study.

The participant indicates that s/he understands that the results of the study, including personal details regarding the interview will be anonymously processed into a research report. The participant indicates that s/he has had time to ask questions and has no objection to participating in the interview. S/he understands that there is no penalty should s/he wish to discontinue the study and his/her withdrawal will not affect access to treatment in any way. I hereby certify that the client has agreed to participate in this study.

Participant's Name(Please print)

Person seeking consent(Please print)

SignatureDate.....

Witness's name(Please print)

SignatureDate.....

APPENDIX D LETTER GRANTING PERMISSION FROM STANZA BOPAPE CLINIC



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Department of Speech-Language Pathology and Audiology

7 February 2017

Dear Sir/Madam

REQUEST TO CONDUCT A RESEARCH PROJECT AT STANZA BOPAPE CLINIC

I, Nichole Fuls, a Masters student in Speech-Language Pathology at the University of Pretoria, would like to request your permission to conduct a research project titled: 'Prevalence and nature of feeding problems in infants in primary health care' at your clinic. I am requesting permission to conduct a study at the Stanza Bopape Clinic, that involves access to patient records as well as patients during their typical monthly follow-up visits to the baby wellness follow-up clinic.

This research study is aiming to determine the prevalence and nature of feeding problems in infants within a primary health care context. The researcher will approach all parents and caregivers that are in a queue waiting with infant's aged six to 12 months, at the baby wellness follow-up clinic. Voluntary informed consent will be requested to take part in the study. The parent or caregiver will be interviewed to gather the necessary background information of the infant's development and feeding history. Additionally, the infant will be weighed and his/her length measured. A feeding screening tool, *The Montreal Child's Hospital Feeding Scale* will be conducted by asking questions to the parents or caregivers to determine if the infant has any feeding problems. The participants who fail the screening will be further assessed using, the *Schedule of Oral Motor Assessment*, to further investigate the extent and nature of their feeding difficulties. If a feeding difficulty is identified the infant will be referred to the Speech-Language therapist at Stanza Bopape Clinic. The researcher will conduct the data collection in English. For the participants who are not proficient in English, a willing staff member will be approached to assist. For all participants, participation is voluntary and they may withdraw from the study at any time without negative consequences. Written informed consent will be obtained.

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This research project will run for an estimated period of three months (February, March and April 2017). I would like to request that an interview room be made available to the researcher to assist in data collection. The research proposal has been submitted to the Faculty of Humanities, University of Pretoria as well as from Tshwane Research Committee, Department of Health. Data collection will only commence when approval by these committees have been obtained. The research report will be made available to you upon request.

If you require any information or have additional queries, please do not hesitate to contact us at 072 929 0036 (Nichole Fuls), 012 420 2948 (Dr. Jeannie van der Linde) and 012 420 4910 (Mrs. Esedra Krüger).

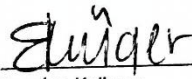
Kind Regards,



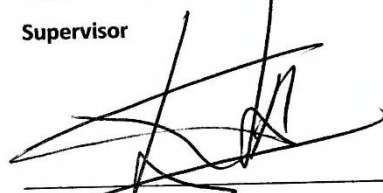
Nichole Fuls
Masters student



Dr. Jeannie van der Linde
Supervisor

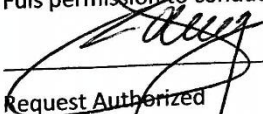


Esedra Krüger
Supervisor



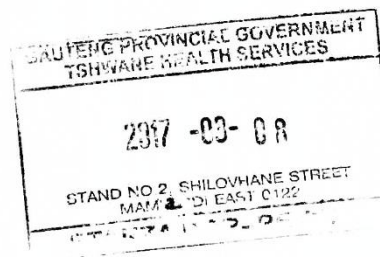
Prof B Vinck
HEAD: Dept. of Speech-Language Pathology
and Audiology

I, Ms. Oshueng grant Nichole
Fuls permission to conduct research at Stanza Bopape Clinic.



Request Authorized

Date 08.03.2017



APPENDIX E PARENT/CAREGIVER INFORMATION LEAFLET AND INFORMED CONSENT FORM TRANSLATED TO SEPEDI



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Department of Speech-Language Pathology and Audiology

7 Feberware 2017

Motswadi/mohlokomedi yo a rategago

THAETLELE YA NYAKIŠIŠO: Ditiragalo le mohuta wa mathata a phepo go masea mo tlhokomelong ya maphelo ya motheo.

Monyakišiši: Nichole Fuls
Dinomoro tša kgokagano: 072 929 0036

1) MATSENO

Ke rata go laletša wena le ngwana wa gago go kgatha tema mo thutong ya dinyakišišo. Pukwana ye ya tshedimošo e tla go thuša go tšea sephetho ge e le gore o nyaka ngwana wa gago a kgatha tema. Pele o ka dumela o swanetše go kwešiša ka botlalo gore e bolela ka eng. Ge o na le dipotšišo dife goba dife tšeo pukwana ye e sa di hlalošego ka botlalo, o kgopelwa go se dikadike go botšiša monyakišiši Nichole Fuls.

2) MOHUTA LE NEPO YA NYAKIŠIŠO YE

Maikemišetšo a nyakišišo ke go hwetša palo ya masea ao a tšwelelago ka mathata a phepo le mohuta wa mathata a phepo ao a tšwelelago. Wena bjalo ka motswadi o ka fa tshedimošo ye bohlokwa ka ga phepo ya ngwana wa gago, kgolo le go ithuta.

3) TLHALOŠO YA DITSHEDIŠO TŠE DI SWANETŠEGO GO LATELWA

Nyakišišo ye e ama poledišano le wena, go botšiša dipotšišo ka ga kgolo ya ngwana wa gago, go ithuta le phepo. Re tla go botšiša dipotšišo tše di itšego ka ga phepo ya ngwana wa gago le kgolo ka kakaretšo. Re tla kala ngwana wa gago gomme ra lekanya botelele bja gagwe go lekola kgolo ya gagwe ka kakaretšo. Re tla lebelela phepo ya gagwe ka mehuta ya go fapana ya dijo.

4) KOTSI LE GO SE IKETLE TŠE DI AMEGAGO

Ga go na dikotsi tša go kgatha tema mo nyakišišong ye. Tshepetšo ya dipolelišano e ka tšea nako ya gago ye nngwe. Tše dingwe tša dipotšišo tšeo re tla go botšišang tšona di ka go dira gore o ikwe o sa iketle, eupša ga o gapeletše go di fetola ge o sa nyake. Poledišano le tekanyo ya phepo ya ngwana wa gago e tla tšea metsotso ye e ka bago ye 30 ya nako ya gago gomme di ka se huetše tlhokomelo ya gago ya tlwaelo kliniking. Ngwana wa gago a ka hloka go ja dijo tšeo a sa di ratego eupša a ka se gapeletšwe ge a sa di nyake.

5) DIKHOLEGO TŠE DI KGONAGALAGO TŠA NYAKIŠIŠO YE

O tla hologa thwii go tšwa nyakišišong ka gore re tla go fa thekgo ya maleba le tlhahlo go thuša ngwana wa gago ka phepo. Go ka se be le dikholego tše dingwe tša thwii go wena. Le ge go le bjalo, dipolelišano tša nyakišišo di tla re thuša go hwetša mathata a phepo e sa le ka pela gore re kgone go fa tlhokomelo ya maleba le thekgo baneng bao ba nago le mathata a phepo ka moso.

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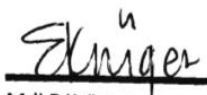
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- 6) **DITOKELO TŠA GAGO KE DIFE BJALO KA MOKGATHATEMA?**
Go kgatha tema ga gago nyakišišong ye ke ga boithaopo. O ka gana go kgatha tema goba wa emiša ka nako ye nngwe le ye nngwe nakong ya dinyakišišo ntle le go fa lebaka. Ge o tšea sephetho sa go *emiša* tlhokomelo ya gago kliniking e ka se amege.
- 7) **NAA NYAKIŠIŠO YE E HWEDITŠE TUMELELO YA MAITSHWARO?**
Nyakišišo ye e hweditše tumelelo go tšwa Lefapheng la Bomotheo, Yunibesithi ya Pretoria gammogo le go Komiti ya Dinyakišišo ya Tshwane, Kgoro ya Maphelo.
- 8) **OTHO YO O KA KGOKAGANAGO LE YENA LE GO HWETŠA TSHEDIMOŠO**
Motho yo o ka kgokaganago le yena malebana le nyakišišo ye ke **Nichole Fuls**. Ge o na le dipotšišo dife goba dife ka ga nyakišišo o kgopelwa go kgokagana le yena go **072 929 0036**. Goba o ka kgokagana le balekodi Mdi Esedra Kruge (012 420 4910) le Ngaka Jeannie van der Linde (012 420 2948).
- 9) **TEFO**
Go kgatha tema ga gago ke ga boithaopo. O ka se lefelwe go kgatha tema mo nyakišišong ye.
- 10) **SEPHIRI**
Tshedimošo ka moka ye o e fago e tla dirwa sephiri le thopa. Leina le tshedimošo ya gago tšeo di ka go tsebišago bjalo ka motho di ka se šomišwe ka pegong mo mafelelong a nyakišišo ye. Dipego tša dinyakišišo le diathekele mo dijenaleng tša saense di ka se akaretše tshedimošo yeo e ka go tsebišago wena le ngwana wa gago goba kliniki. Tshedimošo e tla lotwa ka polokego, bonyenyane mengwaga ye 15 mo Moagong wa Phatholotši ya Dikgokagano, Yunibesithing ya Pretoria.

Ke a leboga,


Mmarena N Fuls
Moithuti wa mastase


Mdi E Krüger
Molekodi


Ngaka J Van Der Linde
Molekodi


Prof B Vinck
HLOGO: Kgoro ya Phatholotši le Odilotši tša
Leleme le Polelo

TUMELELO YA GO KGATHA TEMA DINYAKIŠIŠONG

Ke kgonthiša gore motho yo a kgopelago tumelelo ya ka go kgatha tema nyakišišong ye o mpoeditše gore nyakišišo ye ke ya mohuta mang, tshepetšo, dikotsi, go se iketle, le dikholego tša nyakišišo. Gape ke amogetše, ke badile le go kwešiša tshedimošo ye e ngwadilwego ka godimo (Pukwana ya Tshedimošo le Tumelelo ya Tsebo) ka ga nyakišišo. Ke a lemoga gore dipelo tša nyakišišo, go akaretša le tshedimošo ya motho, di tla dirwa thopa le sephiri. Ke kgatha tema ka tokologo. Ke bile le nako ya go botšiša dipotšišo gomme ga ke na bothata bja go kgatha tema nyakišišong. Ke kwešiša gore ga go na kotlo ge nka nyaka go ikogela morago nyakišišong gomme se se ka se ame phihlelo ya kalafo ka mokgwa ofe goba ofe.

Ke amogetše kopi ye e saennwego ya kwano ya tumelelo ya tsebo.

Leina la mokgathatema(O kgopelwa go gatiša)
 Tshaeno ya mokgathatema Tšatšikgwedi.....
 Leina la monyakišiši(O kgopelwa go gatiša)
 Tshaeno ya monyakišiši Tšatšikgwedi
 Leina la hlatse(O kgopelwa go gatiša)
 Tshaeno ya Hlatse Tšatšikgwedi.....

TUMELELO YA TSEBO YA MOLOMO

Nna, yo a saennego ka fase, ke badile gomme ke hlalošitše ka botlalo pukwana ya tshedimošo ya mokgathatema, yeo e hlalošago mokgwa, dikotsi, go se iketle le dikholego tša nyakišišo go mokgathatema yo ke mo kgopetšego go kgatha tema mo nyakišišong.

Mokgathatema o bolela gore o kwešiša gore dipelo tša nyakišišo, go akaretšwa le tshedimošo ya motho malebana le dipoledišano di dirišwa pegong ya dinyakišišo ntle le maina. Mokgathatema o bolela gore o bile le nako ya go botšiša dipotšišo gomme ga a gane go kgatha tema dipoledišanong. O kwešiša gore ga go na kotlo ge a nyaka go ikogela morago nyakišišong gomme go ikogela morago ga gagwe go ka se ame phihlelelo ya kalafo ka mokgwa ofe goba ofe. Ke kgonthiša gore modirelwa o dumetše go kgathatema mo nyakišišong ye.

Leina la mokgathatema(O kgopelwa go gatiša)
 Motho yo a nyakago tumelelo(O kgopelwa go gatiša)
 TshaenoTšatšikgwedi
 Leina la hlatse(O kgopelwa go gatiša)
 Tshaeno.....Tšatšikgwedi.....

APPENDIX F PARENT/CAREGIVER INFORMATION LEAFLET AND INFORMED CONSENT FORM TRANSLATED TO ZULU



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Faculty of Humanities
Department of Speech-Language Pathology and Audiology

7 uFebruwari 2017

Mzali/Mnikezeli Wokunakekela Othandekayo

ISIHLOKO SOCWANINGO: Ukuvama kanye nohlobo lwezinkinga zokunikeza ukudla ezinganeni ezincane ezikunakekelwa kwezempilo okuqalisayo

Umcwaningi: Nichole Fuls
Inamba Yokuxhumana: 0729290036

1) ISINGENISO

Ngithanda ukumema wena nengane yakho ukuba nibambe iqhaza esifundweni socwaningo. Leli khasi lolwazi lizokusiza ukuba uthathe isinqumo sokuthi uyafuna yini ukuthi ingane yakho ibambe iqhaza. Ngaphambi kokuba uvume ukubamba iqhaza kumele uqondise ngokuphelele ukuthi yini okubandakanyekayo. Uma ngabe unemibuzo engachazwa yileli khasi lolwazi ngokuphelele, siyacela ukuthi ungabazi ukubuza umphenyi u-Nichole Fuls.

2) UHLOBO KANYE NENJONGO YALOLU CWANINGO

Inhloso yalolu cwaningo ukuthola inani lezingane ezincane ezethulwa nezinkinga zokunikezwa ukudla kanye nohlobo lwezinkinga zokudla ezinazo. Wena njengomzali unganikeza ulwazi olusemqoka ngokuphathelele nokunikezwa kwengane yakho ukudla, ukukhula kanye nokufunda.

3) INCAZELO YENQUBO OKUMELE ILANDELWE

Lolu cwaningo lubandakanya ukuxoxisana (i-inthavuyu) nawe, ukubuza imibuzo ngokukhula, ukufunda kanye nokunikezwa ukudla kwengane yakho. Sizokubuza imibuzo ethile ngokuphathelele nokunikezwa ukudla kwengane yakho kanye nokuthuthuka jikelele. Sizokala ingane yakho silinganise nobude bayo ukuhlola ukukhula kwayo. Sizobheka ukunikezwa kwayo izinhlobo zokudla ezihlukene.

4) INGOZI KANYE NOKUPHATHEKA KABI OKUBANDAKANYEKAYO

Akukho ngozi ekubambeni iqhaza ocwaningweni. Inqubo yokuxoxisana ingathatha ingxenye yesikhathi sakho. Eminye yemibuzo esizokubuza yona ingakwenza uzizwe uphatheka kabi, kodwa awuphoqelekile ukuba uyiphendule uma ungafuni. Ukuxoxisana kanye nokuhlolwa kokunikezwa ukudla kwengane yakho kuzothatha amaminithi angama-30 esikhathi sakho futhi awasoze athelela ukunakekelwa kwakho okujwayelekile kwasemtholampilo. Ingane yakho kungafuneka ukuba idle ukudla engathandi ukudla ngokuvamile kodwa asoze yaphoqelelwa uma ngabe ayikuthandi.


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- 5) **IZINZUZO EZINGABA KHONA ZALOLU CWANINGO**
Uzozuza ngokuqondile ocwaningweni ngoba sizokunikeza ukweseka okufanele kanye nokwelelulekwa ukusiza ingane yakho maqondana nokunikezwa ukudla. Akusoze kwaba nenye inzuzo eqondile kuwe. Kodwa, imiphumela yocwaningo izosisiza ukuthola izinkinga zokunikeza ukudla kusenesikhathi ukuze sikwazi ukunikeza ukunakekela kanye nokweseka ezinganeni ezincane ezinenkinga yokunikezwa ukudla esikhathini esizayo .
- 6) **LOKO OKUNGAMALUNGELO AKHO NJENGOMBAMBIQHAZA?**
Ukubamba iqhaza kwakho kulolucwaningo kungokuzithandela ngokuphelele. Ugenqaba ukubamba iqhaza noma uyeke nganoma yisiphi isikhathi ngesikhathi ucwaningo luqhubeka ngaphandle kokunikeza isizathu. Uma uthatha isinqumo sokumisa ukunakekelwa kwengane yakho emtholampilo asoze kwatheleleka.
- 7) **KUNGABE LOLU CWANINGO LUNEMVUME YOKUZIPHATHA NGOKWESIMILO?**
Lolu cwanningo luthole imvume ku-Faculty ye-Humanities, eNyuvesi yasePitoli kanye naku-Komiti Yocwaningo yase-Tshwane, yoMnyango Wezempilo.
- 8) **ULWAZI NOMUNTU OKUXHUNYWANA NAYE**
Umntu ongaxhumana naye mayelana nalolu cwanningo ngu-**Nichole Fuls**. Uma ngabe unanoma yimiphi imibuzo maqondana nocwaningo sicela uxhumane naye ku-**072 929 0036**. Noma ungaxhumana nabahloli bakhe uNkss Esedra Krüger ku-(012 420 4910) kanye noDkt Jeannie van der Linde ku-(012 420 2948).
- 9) **ISIBONELELO**
Ukubamba iqhaza kwakho kungokuzithandela. Awusoze wakhokhelelwa ukubamba iqhaza kulolu cwanningo.
- 10) **UBUMFIHLO**
Lonke ulwazi olunikezayo luzogcinwa ngasese futhi luyimfihlo. Igama lakho kanye nanoma yimiphi imininingwane ekwazisayo njengomuntu ayisoze yasetshenziswa kumbiko ekupheleni kwesifundo. Imibiko yocwaningo kanye nama-athikili akumajenali esayensi asoze abandakanya yinoma yiluphi ulwazi olungazisa wena noma ingane yakho noma umtholampilo. Ulwazi luzogcinwa ngokuphephile, iminyaka engaba ngaphansi kweyi-15 EBholidini le-Phatholoji Yezokuxhumana eNyuvesi yasePitoli.


Ozithobayo,



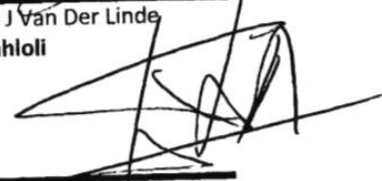
Me N Fuls
Isitshudeni seziqu zeMasters



Nkss E Krüger
Umdloli



Dkt J Van Der Linde
Umdloli



USotwazi B Vindk
INHLOKI: YoMnyango we-Speech-Language
Pathology and Audiology

IMVUME YOKUBAMBA IQHAZA KULOLU CWANINGO

Nginyaqinisekisa ukuthi lo muntu ocela imvume yami yokuthi ngibambe iqhaza kulolu cwano ngitshelile ukuthi hlobo luni locwano lolu, inqubo, izingozi, ukuphatheka kabi kanye nezinzuzo zocwano. Ngiye ngathola futhi, ngafunda ngaqondisa ulwazi olungenhla olubhaliwe (Ikhasi lolwazi kanye Nemvume Enolwazi) ngokuphathelele nocwano. Ngiyazi ukuthi imiphumela yocwano kubandakanya neminingwane yomuntu uqobo, izogcinwa ngasese futhi iyimfihlo. Ngibamba iqhaza ngokuzithandela. Ngiye ngaba nesikhathi sokubuza imibuzo futhi anginankinga ekubambeni iqhaza ocwano. Ngiyaqonda ukuthi akukho kuhlalwuliswa uma ngifisa ukuyeka ukubamba iqhaza ocwano futhi loku asoze kwathelela ukufinyelela kwami ukwelashwa nganoma iyiphi indlela.

Ngiyitholile ikhophi esayiniwe yalesi sivumelwano semvume enolwazi.

Igama lombambiqhaza(Sicela uphrinte)
 Isignesha yombambiqhaza Usuku.....
 Igama Lomphenyi (Sicela uphrinte)
 Isignesha Yomphenyi Usuku.....
 Igama Likafakazi(Sicela uphrinte)
 Isignesha Kafakazi Usuku.....

IMVUME ENOLWAZI EYENZIWA NGOMLOMO

Mina, osayine lapha ngezansi, ngilifundile futhi ngichaze ngokuphelele ikhasi lolwazi lombambiqhaza, elichaza uhlobo, inqubo, izingozi, ukuphatheka kabi kanye nezinzuzo zocwano kumbambiqhaza engiye ngamcela ukuthi abambe iqhaza ocwano.

Umbambiqhaza ubonisa ukuthi yena uyaqonda ukuthi imiphumela yocwano, ebandakanya iminingwane yakhe ngokuphathelele nokuxoxisana izokuhlaziywa ngokungaziwa ukuthi ngekabani embikweni wocwano. Umbambiqhaza ubonisa ukuthi yena uye waba nethuba lokubuza imibuzo futhi akanako ukuphikisa maqondana nokubamba iqhaza kukuxoxisana. Yena uyaqonda ukuthi ayikho inhlawulo uma yena efisa ukuyeka ocwano futhi ukuzihoxisa kwakhe akusoze kwathelela ukufinyelela kwakhe ukwelashwa nganoma iyiphi indlela. Ngaloku ngiqinisa ukuthi iklayenti livumile ukubamba iqhaza kulolu cwano.

Igama Lombambiqhaza(Sicela uphrinte)
 Umuntu ofuna imvume(Sicela uphrinte)
 IsigneshaUsuku.....
 Igama likafakazi(Sicela uphrinte)
 Isignesha..... Usuku.....

APPENDIX G BACKGROUND PARTICIPANT AND FAMILY INFORMATION QUESTIONNAIRE

QUESTIONNAIRE

Participant and family information (Van der Linde, Swanepoel, Glascoe, Louw, & Vinck, 2015).

Please answer the questions by drawing a circle around an appropriate number in a shaded box or by writing your answer in the shaded box provided.

				FOR OFFICE USE ONLY	
INFANT CODE:					V1
Infant information					
1. What is the date of the test series? (Please use dd/mm/yy)	DAY	MONTH	YEAR	V2	
2. What is the date of birth of the infant? (Please use dd/mm/yy)	DAY	MONTH	YEAR	V3	
3. What is the age of the infant?	MONTHS			V4	
4. What is the gender of the infant?	MALE	FEMALE		V5	
	1	2			
5. How many weeks premature was the infant? (Whole weeks only)	WEEKS			V6	
6. Has the infant been exposed to HIV?	YES	NO		V7	
	1	2			
7. What is the infant's current status?	POSITIVE		NEGATIVE		V8
	1		2		
8. Is the infant currently receiving treatment for HIV?	YES	NO		V9	
	1	2			
Caregiver information					
9. What is your relation to the infant?	MOTHER OF INFANT		FATHER OF INFANT		V10
	1	2			
	FAMILY MEMBER OF INFANT		NON-FAMILY CAREGIVER OF INFANT		
	3		4		
10. What is your age, as of your last birthday?	YEARS			V11	
11. What is your home language? (Indicate those applicable)	AFRIIKAANS	ENGLISH	ISINDEBELE	V12	
	1	2	3		
	ISIZULU	ISIXHOSA	SEPEDI	A	B
	4	5	6		
	SESOTHO	SETSWANA	SISWATI	C	D
	7	8	9		
	VENDA	XITSONGA	OTHER (SPECIFY)	E	F
	10	11	12		

12. What other languages do you speak? (Indicate those applicable)	AFRIKAANS 1	ENGLISH 2	ISINDEBELE 3	V13	
	ISIZULU 4	ISIXHOSA 5	SEPEDI 6	A	B
	SESOTHO 7	SETSWANA 8	SISWATI 9	C	D
	VENDA 10	XITSONGA 11	OTHER (SPECIFY) 12	E	F
13. In terms of the Employment Equity Act, to which population group do you belong?	BLACK 1	COLOURED 2	WHITE 3	V14	
	ASIAN 4	OTHER (SPECIFY) 5			
14. Who is the primary caregiver of the infant?	MOTHER 1	FATHER 2	BOTH PARENTS 3	V15	
	GRAND-PARENTS 4	EXTENDED FAMILY MEMBERS 5	FOSTER PARENTS 6		
	OTHER (SPECIFY) 7				
15. What is the highest educational qualification of the mother of the infant?	I DO NOT KNOW 1	NO FORMAL SCHOOLING 2	LESS THAN GRADE 8 3	V16	
	GRADE 8 TO GRADE 10 4	GRADE 11 TO GRADE 12 5	DIPLOMA / DEGREE 6		
	POSTGRADUATE 7				
16. What is the highest educational qualification of the father of the infant?	I DO NOT KNOW 1	NO FORMAL SCHOOLING 2	LESS THAN GRADE 8 3	V17	
	GRADE 8 TO GRADE 10 4	GRADE 11 TO GRADE 12 5	DIPLOMA / DEGREE 6		
	POSTGRADUATE 7				

17. What is the highest educational qualification of the caregiver of the infant?	I DO NOT KNOW 1	NO FORMAL SCHOOLING 2	LESS THAN GRADE 8 3	V18
	GRADE 8 TO GRADE 10 4	GRADE 11 TO GRADE 12 5	DIPLOMA / DEGREE 6	
	POSTGRADUATE 7			
18. What is the average household income per month?	R			V19
19. What is the age of the infant's mother?				V20
20. How many children has the mother given birth to?				V21
21. How many living children does the mother have?				V22
22. What is the marital status of the mother of the infant?	I DO NOT KNOW 1	NEVER MARRIED 2	LIVING TOGETHER 3	V23
	MARRIED (AND OR TRADITIONAL) 4	WIDOWED 5	SEPARATED 6	
	DIVORCED 7			
23. What is the marital status of the father of the infant?	I DO NOT KNOW 1	NEVER MARRIED 2	LIVING TOGETHER 3	V24
	MARRIED (AND OR TRADITIONAL) 4	WIDOWED 5	SEPARATED 6	
	DIVORCED 7			
24. What is the marital status of the caregiver of the infant?	I DO NOT KNOW 1	NEVER MARRIED 2	LIVING TOGETHER 3	V25
	MARRIED (AND OR TRADITIONAL) 4	WIDOWED 5	SEPARATED 6	
	DIVORCED 7			

25. What is your housing status?	OWN MY HOUSE 1	OWN MY FLAT 2	INFORMAL HOUSING 3	V26	
	I AM RENTING 4		I STAY WITH OTHERS 5		OTHER 6
	OWN A A	RENTING B B			
26. Do you make use of day-care for you infant?	YES 1	NO 2		V27	
27. How many people are living in the household?				V28	
28. Is the primary caregiver employed?	YES 1	NO 2		V29	
Infant feeding history and development					
29. Did the infant have any neonatal feeding difficulties (first two weeks after birth)?	YES 1	NO 2		V30	
30. Did the infant have to stay in hospital for any reason?	YES 1	NO 2		V31	
	SPECIFY REASONS 3			V32	
31. Did the infant receive tube feeding?	YES 1	NO 2		V33	
	OROGASTRIC 1	NASOGASTRIC 2		V34	
	HOW LONG? 3			V35	
32. Was the infant breastfed?	YES 1	NO 2		V36	
33. Did the infant receive colostrum? (Did they breast feed immediately?)	YES 1	NO 2		V37	
34. Did the infant receive breast milk?	YES 1	NO 2		V38	
35. Was the breast milk given via direct breastfeeding or expression?	DIRECT 1	EXPRESS 2		V39	
36. If expressed, was it given via bottle or cup?	BOTTLE 1	CUP 2		V40	
37. Where there any difficulties with breast feeding?	YES 1	NO 2		V41	
38. What type of difficulties were identified?				V42	

39. Was it problems with the mother's breasts? Specify.	PAIN 1	SWELLING 2	ENGORGEMENT 3	V43		
	BLEEDING NIPPLE 4	OTHER 5				
40. Was it problems with the infant? Specify.	LATCHING ON THE BREAST 1		SUCKING ON THE BREAST 2		V44	
	FALLING ASLEEP AT THE BREAST TOO SOON 3		OTHER 4			
41. How long has the infant been breast feeding for? (in months)	MONTHS			V45		
42. What type of milk is being given?				V46		
43. Is the infant bottle-fed?	YES 1	NO 2		V47		
44. What type of bottle is used?				V48		
45. How long has the infant been bottle-fed? (in months)	MONTHS			V49		
46. Other than milk, what liquid does the infant drink?				V50		
47. Has the infant been introduced to a cup?	YES 1	NO 2		V51		
	AT WHAT AGE?			V52		
48. What consistencies / food textures does the infant eat at the moment?	PUREE 1	SEMI-SOLIDS 2	SOLIDS 3	V53	A	B
	CRACKERS 4	LIQUIDS 5	OTHER (SPECIFY) 6	C	D	E F
49. When was solid food introduced for the first time?	MONTHS			V54		
50. What was the first solid food introduced?				V55		
51. Which method was used to introduce solids?	MOTHER'S HAND 1	SPOON 2	OTHER 3	V56		

52. How often do you feed your infant during the day? A Breastfeeding	SCHEDULED FEEDING 1	FEEDING ON DEMAND 2	V57			
	INTERVALS OF SCHEDULED FEEDS (HOURS) 3	AMOUNT OF ON DEMAND FEEDS 4	A			
	OTHER (SPECIFY) 5		B			
B Bottle fed	SCHEDULED FEEDING 1	FEEDING ON DEMAND 2	V58			
	INTERVALS OF SCHEDULED FEEDS (HOURS) 3	AMOUNT OF ON DEMAND FEEDS 4	A			
	OTHER (SPECIFY) 5		B			
C Porridge (solids)	SCHEDULED FEEDING 1	FEEDING ON DEMAND 2	V59			
	INTERVALS OF SCHEDULED FEEDS (HOURS) 3	AMOUNT OF ON DEMAND FEEDS 4	A			
	OTHER (SPECIFY) 5		B			
53. How much milk does your infant drink in a feeding session? (Bottle-fed)	ml		V60			
54. How long does a feeding session usually last? A. Breast feeding B. Bottle feeding C. Solids	5 MIN 1	10 MIN 2	15 MIN 3	V 61	V 62	V 63
	20 MIN 4	25 MIN 5	OTHER 6	A	B	C
55. How much porridge (solid consistency) does your child consume in a single feeding session?	TABLE SPOONS (15 ML)			V64		
56. What is the infant's current weight?	kg			V65		
57. Is the mother/ caregiver currently concerned about the infant's feeding or weight gain?	YES 1	NO 2	V66			
	CONCERN			V67		

Thank you for your time and cooperation

APPENDIX H THE MONTREAL CHILDREN'S HOSPITAL – FEEDING SCALE (MCH-FS)

The Montreal Children's Hospital Feeding Scale (MCH-FS)

For children 6 months – 6 years

(Ramsay ,Martel, Porporino, & Zygmntowicz, 2011)

Circle the corresponding number on each item. Note that the meaning of the numbers vary – they do not all go in the same direction.

								FOR OFFICE USE ONLY	
INFANT CODE:								V1	
1.	How do you find mealtimes with your child	1	2	3	4	5	6	7	V68
		VERY DIFFICULT			EASY				
2.	How worried are you about your child's eating?	1	2	3	4	5	6	7	V69
		NOT WORRIED			VERY WORRIED				
3.	How much appetite (hunger) does your child have?	1	2	3	4	5	6	7	V70
		NEVER HUNGRY			GOOD APPETITE				
4.	When does your child start refusing to eat during mealtimes?	1	2	3	4	5	6	7	V71
		AT THE BEGINNING			AT THE END				
5.	How long do mealtimes take for your child (in minutes)?	1	2	3	4	5	6	7	V72
		1-10	11-20	21-30	31-40	41-50	51-60	>60 MIN	
6.	How does your child behave during mealtimes?	1	2	3	4	5	6	7	V73
		BEHAVES WELL			ACTS UP, MAKES A BIG FUSS				
7.	Does your child gag or spit or vomit with certain types of food?	1	2	3	4	5	6	7	V74
		NEVER			MOST OF THE TIME				
8.	Does your child hold food in his/her mouth without swallowing it?	1	2	3	4	5	6	7	V75
		MOST OF THE TIME			NEVER				
9.	Do you have to follow your child around or use distractions (toys,TV) so that your child will eat?	1	2	3	4	5	6	7	V76
		NEVER			MOST OF THE TIME				
10.	Do you have to force your child to eat or drink?	1	2	3	4	5	6	7	V77
		MOST OF THE TIME			NEVER				
11.	How are your child's chewing (or sucking) abilities?	1	2	3	4	5	6	7	V78
		GOOD			VERY POOR				
12.	How do you find your child's growth?	1	2	3	4	5	6	7	V79
		GROWING POORLY			GROWING WELL				
13.	How does your child's feeding influence your relationship with him/her?	1	2	3	4	5	6	7	V80
		VERY NEGATIVELY			NOT AT ALL				
14.	How does your child's feeding influence your family relationships?	1	2	3	4	5	6	7	V81
		NOT AT ALL			VERY NEGATIVELY				

The MCH-Feeding Scale Scoring sheet

						FOR OFFICE USE ONLY				
INFANT CODE:						V1				
DATE OF SCREENING:						V2				
BIRTHDATE:						V3				
AGE:						V4				
To get the total raw score:				Raw score	T-score	Raw score	T-score	T-score ranges	Interpretation	
1. Enter the scores of the 7 items with asterisk in first column.				14	35	56	68	61 to 65	Mild difficulties	
2. Reverse the scores for the items with asterisk in the 1 st column (1→7, 2→6, 3→5, 4→4, 5→3, 6→2, 7→1) and enter the reversed scores in the 2 nd column.				15	36	57	69	66 to 70	Moderate difficulties	
3. Enter the scores of the 7 items without asterisk in the 2 nd column.				16	37	58	70			
4. Add the scores of the 14 items in the 2 nd column to get total raw score.				17	38	59	71			
				18	39	60	72			
				19	39	61	72			
				20	40	62	73			
				21	41	63	74			
				22	42	64	75	Above 70	Severe difficulties	
				23	43	65	76			
				24	43	66	76			
				25	44	67	77			
				26	45	68	78			
				27	46	69	79			
				28	46	70	80			
				29	47	71	80			
				30	48	72	81			
				31	49	73	82			
				32	50	74	83			
				33	50	75	83			
				34	51	76	84			
				35	52	77	85			
				36	53	78	86			
				37	54	79	87			
				38	54	80	87			
				39	55	81	88			
				40	56	82	89			
				41	57	83	90			
				42	57	84	91			
				43	58	85	91			
				44	59	86	92			
				45	60	87	93			
				46	61	88	94			
				47	61	89	94			
				48	62	90	95			
				49	63	91	96			
				50	64	92	97			
				51	65	93	98			
				52	65	94	98			
				53	66	95	99			
				54	67	96	100			
				55	68	97	101			
							98	102		
TOTAL RAW SCORE:										
INTERPRETATION OF DIFFICULTIES				MILD 1		MODERATE 2		SEVERE 3		V83
MCH-FS				PASS		FAIL				V84

APPENDIX I SCHEDULE FOR ORAL-MOTOR-ASSESSMENT (SOMA)

Schedule for Oral-Motor Assessment (SOMA)

(Skuse,Stevenson, Reilly & Mathisen, 1995)

						FOR OFFICE USE ONLY
INFANT CODE:						V1
DATE OF ASSESSMENT:						V2
DATE OF BIRTH:						V3
AGE:						V4
BODY POSITION:						V85
HEAD POSITION:						V86
SUPPORT REQUIRED:						V87
PURÉE						V88
CHEESE	MOUSSE	PURÉED FRUIT	OTHER			
1	2	3	4			
NON-RATEABLE			RATEABLE			
REFUSED	OMITTED	NOT OBSERVED	YES	NO		
1	2	3	4	5		
REACT 1	Head orientation to spoon		YES 4	NO 5	V89 A B	
SEQUENCE 1	Smooth rhythmic sequence		YES 4	NO 5	V90 A B	
LIP 1	Lower lip draws inwards around spoon		YES 4	NO 5	V91 A B	
LIP 2	Upper lip removes food from spoon		YES 4	NO 5	V92 A B	
LIP 3	Lower/ upper lip assists in cleaning		YES 4	NO 5	V93 A B	
LIP 11	Lower lip active during suck/munch/chew		YES 4	NO 5	V94 A B	
TONGUE 11	Consistent/ considerable protrusion		YES 4	NO 5	V95 A B	
TONGUE 12	Protrusion beyond incisors		YES 4	NO 5	V96 A B	
JAW 1	Graded jaw opening		YES 4	NO 5	V97 A B	
SUM OF SHADED BOXES					V98	
Cutting score: > 3 indicates oral motor dysfunction < 3 normal oral motor function			ORAL MOTOR DYSFUNCTION 1	ORAL MOTOR FUNCTION 2	V99	

BODY POSITION:					V100	
HEAD POSITION:					V101	
SUPPORT REQUIRED:					V102	
SEMI-SOLIDS						
PEAS 1		BAKED BEANS 2		COTTAGE CHEESE 3	OTHER 4	V103
NON-RATEABLE			RATEABLE			
REFUSED 1	OMITTED 2	NOT OBSERVED 3	YES 4	NO 5		
DROOL 1	Consistent/ considerable drooling		YES 4	NO 5		V104 A B
SEQUENCE 1	Smooth rhythmic sequence		YES 4	NO 5		V105 A B
INITIATION 1	Sequence initiated within 2 seconds		YES 4	NO 5		V106 A B
LIP 13	Lips closed during swallow		YES 4	NO 5		V107 A B
JAW 1	Graded jaw opening		YES 4	NO 5		V108 A B
JAW 2	Internal jaw stabilisation		YES 4	NO 5		V109 A B
JAW 3	External jaw stabilisation required 100%		YES 4	NO 5		V110 A B
JAW 10	Associated jaw movements		YES 4	NO 5		V111 A B
SUM OF SHADED BOXES						V112
Cutting score: > 4 indicates oral motor dysfunction < 4 indicates normal oral motor function			ORAL MOTOR DYSFUNCTION 1	ORAL MOTOR FUNCTION 2		V113
BODY POSITION:					V114	
HEAD POSITION:					V115	
SUPPORT REQUIRED:					V116	
SOLIDS						
POTATO SALAD 1		FRUIT SALAD 2		OTHER 3		V117
NON-RATEABLE			RATEABLE			
REFUSED 1	OMITTED 2	NOT OBSERVED 3	YES 4	NO 5		
FOOD LOSS 1	None/ trivial		YES 4	NO 5		V118 A B
DROOL 1	Consistent/ considerable drooling		YES 4	NO 5		V119 A B
SEQUENCE 1	Smooth rhythmic sequence		YES 4	NO 5		V120 A B
LIP 1	Lower lip draws inwards around spoon		YES 4	NO 5		V121 A B

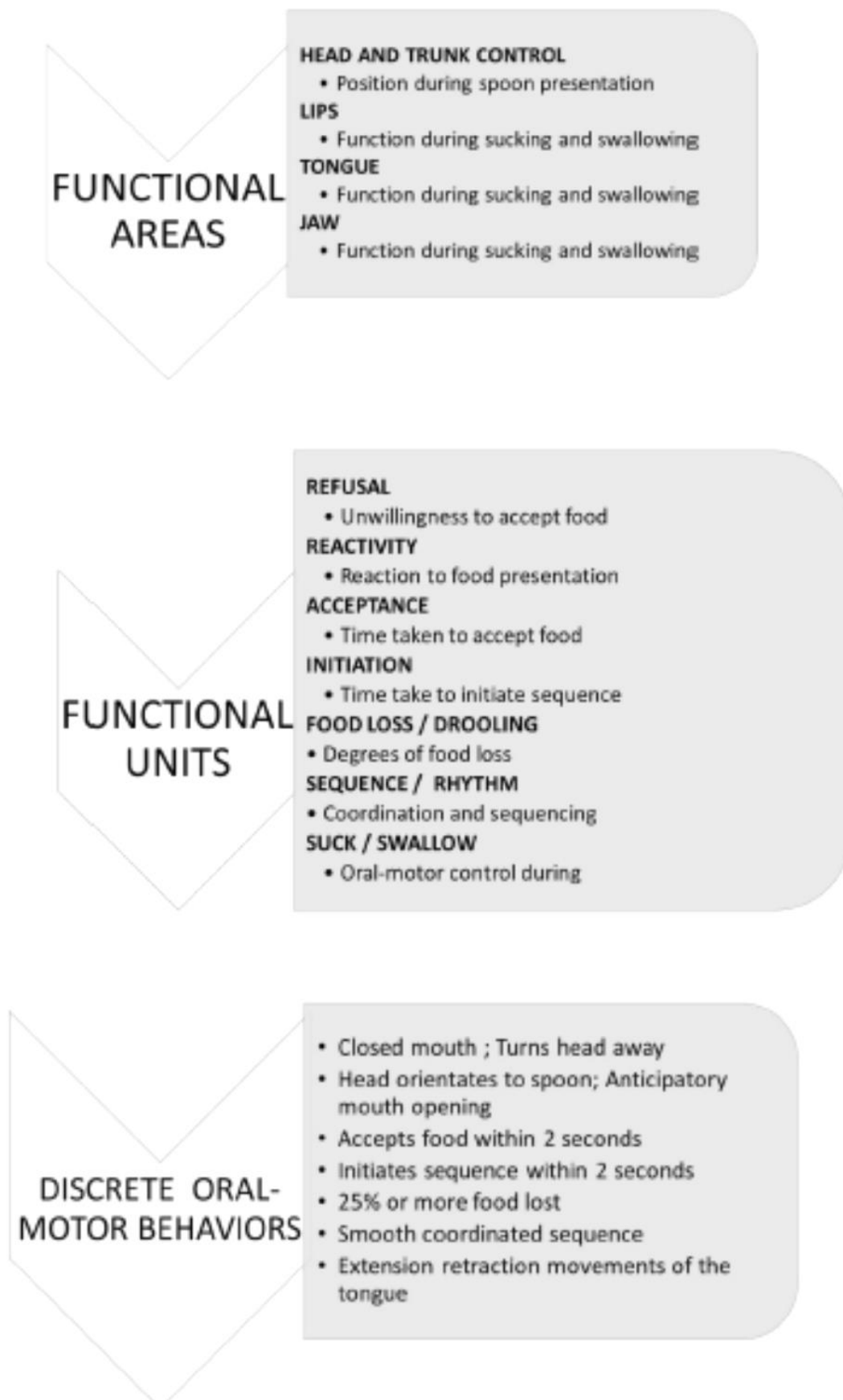
LIP 2	Upper lip removes food from spoon	YES 4	NO 5	V122 A B	
LIP 4	Lower lip behind upper teeth/ suckling	YES 4	NO 5	V123 A B	
LIP 11	Lower lip active during suck/much/chew	YES 4	NO 5	V124 A B	
TONGUE 10	Transient/ minimal tongue protrusion	YES 4	NO 5	V125 A B	
JAW 1	Graded jaw opening	YES 4	NO 5	V126 A B	
SUM OF SHADED BOXES				V127	
Cutting score: > 4 indicates oral motor dysfunction < 4 indicates normal oral motor function		ORAL MOTOR DYSFUNCTION 1	ORAL MOTOR FUNCTION 2	V128	
BODY POSITION:				V129	
HEAD POSITION:				V130	
SUPPORT REQUIRED:				V131	
CRACKER					
NON-RATEABLE			RATEABLE		
REFUSED 1	OMITTED 2	NOT OBSERVED 3	YES 4	NO 5	
FOOD LOSS 1	Profuse/ marked food loss		YES 4	NO 5	V132 A B
DROOL 1	Profuse/ marked drooling		YES 4	NO 5	V133 A B
INITIATION 1	Sequence initiated within 2 seconds		YES 4	NO 5	V134 A B
LIP 4	Lower lip behind upper teeth to suck		YES 4	NO 5	V135 A B
LIP 7	Lips close around stimulus during bite		YES 4	NO 5	V136 A B
LIP 9	Lips close intermittently during suck/much/chew		YES 4	NO 5	V137 A B
TONGUE 10	Transient minimal tongue protrusion		YES 4	NO 5	V138 A B
TONGUE 11	Considerable/ consistent tongue protrusion		YES 4	NO 5	V139 A B
TONGUE 12	Protrusion beyond incisors		YES 4	NO 5	V140 A B
TONGUE 13	Protrusion beyond lips		YES 4	NO 5	V141 A B
JAW 2	Internal jaw stabilisation established		YES 4	NO 5	V142 A B

JAW 3	Variable stabilisation (not fully established)	YES 4	NO 5	V143 A B	
JAW 4	External stabilisation required	YES 4	NO 5	V144 A B	
JAW 5	Vertical movements	YES 4	NO 5	V145 A B	
JAW 8	Wide vertical excursions	YES 4	NO 5	V146 A B	
JAW 9	Small vertical excursions	YES 4	NO 5	V147 A B	
JAW 11	Associated head movements to bite	YES 4	NO 5	V148 A B	
JAW 12	Uses fingers to transfer food	YES 4	NO 5	V149 A B	
SWALLOW 9	Gagging	YES 4	NO 5	V150 A B	
BITE 5	Controlled sustained bite	YES 4	NO 5	V151 A B	
BITE 8	Graded jaw opening	YES 4	NO 5	V152 A B	
BITE 12	Mouthes cracker only	YES 4	NO 5	V153 A B	
SUM OF SHADED BOXES				V154	
Cutting score: > 9 indicates oral motor dysfunction < 9 indicates normal oral motor function		ORAL MOTOR DYSFUNCTION 1	ORAL MOTOR FUNCTION 2	V155	
BODY POSITION:				V156	
HEAD POSITION:				V157	
SUPPORT REQUIRED:				V158	
<u>BOTTLE</u>					
INDICATE LIQUID ADMINISTRED:				V159	
NON-RATEABLE			RATEABLE		
REFUSED 1	OMITTED 2	NOT OBSERVED 3	YES 4	NO 5	
REACT 2	Anticipatory mouth opening		YES 4	NO 5	V160 A B
REACT 4	No liquid enters mouth		YES 4	NO 5	V161 A B
ACCEPT 2	Accepts liquid within 2 seconds		YES 4	NO 5	V162 A B
LIP 3	Upper lip firmly seals around teat		YES 4	NO 5	V163 A B
LIP 5	Intermittent/ incomplete upper lip contact/ seal		YES 4	NO 5	V164 A B

LIP 6	Intermittent/ incomplete lower lip contact/ seal	YES 4	NO 5	V165 A B
LIP 7	Lip closure during swallow	YES 4	NO 5	V166 A B
JAW 1	Small vertical movements	YES 4	NO 5	V167 A B
SEQUENCE 1	Smooth rhythmic sequence	YES 4	NO 5	V168 A B
SUM OF SHADED BOXES				V169
Cutting score: > 5 indicates oral motor dysfunction < 5 indicates normal oral motor function		ORAL MOTOR DYSFUNCTION 1	ORAL MOTOR FUNCTION 2	V170
BODY POSITION:				V171
HEAD POSITION:				V172
SUPPORT REQUIRED:				V173
TRAINER CUP				
INDICATE LIQUID ADMINISTERED:				V174
NON-RATEABLE			RATEABLE	
REFUSED 1	OMITTED 2	NOT OBSERVED 3	YES 4	NO 5
LIVID LOSS	Profuse/marked liquid loss		YES 4	NO 5
SEQUENCE 2	Panic reactions when liquid presented		YES 4	NO 5
SEQUENCE 3	Choking		YES 4	NO 5
TONGUE 10	Tongue thrust		YES 4	NO 5
TONGUE 11	Asymmetry		YES 4	NO 5
JAW 1	Small vertical movements		YES 4	NO 5
JAW 6	Jaw alignment during drinking		YES 4	NO 5
JAW 10	External jaw stabilisation required 100%		YES 4	NO 5
JAW 12	Internal stabilisation		YES 4	NO 5
SWALLOW 1	Jaw alignment		YES 4	NO 5
SWALLOW 4	Panic reactions during/after swallow		YES 4	NO 5
SWALLOW 5	No swallow observed		YES 4	NO 5
SWALLOW 6	Uses gravity, e.g. head extension		YES 4	NO 5

SWALLOW 7	Numerous attempts to initiate swallow						YES 4	NO 5	V188 A B
SUM OF SHADED BOXES								V189	
Cutting score: > 5 indicates oral motor dysfunction < 5 indicates normal oral motor function						ORAL MOTOR DYSFUNCTION 1	ORAL MOTOR FUNCTION 2	V190	
BODY POSITION:								V191	
HEAD POSITION:								V192	
SUPPORT REQUIRED:								V193	
CUP									
INDICATE LIQUID ADMINISTERED:								V194	
NON-RATEABLE						RATEABLE			
REFUSED 1		OMITTED 2		NOT OBSERVED 3		YES 4	NO 5		
ACCEPT 2	Accepts within 2 seconds					YES 4	NO 5	V195 A B	
SEQUENCING 2	Panic reactions when liquid placed in mouth					YES 4	NO 5	V196 A B	
SEQUENCING 3	Choking					YES 4	NO 5	V197 A B	
LIQUID LOSS	Profuse/ marked liquid loss					YES 4	NO 5	V198 A B	
TONGUE 10	Tongue thrust					YES 4	NO 5	V199 A B	
TONGUE 11	Asymmetry					YES 4	NO 5	V200 A B	
JAW 1	Small vertical movements					YES 4	NO 5	V201 A B	
JAW 4	Jaw clenching					YES 4	NO 5	V202 A B	
SWALLOW 9	Gagging					YES 4	NO 5	V203 A B	
SUM OF SHADED BOXES								V204	
Cutting score: > 5 indicates oral motor dysfunction < 5 indicates normal oral motor function						ORAL MOTOR DYSFUNCTION 1	ORAL MOTOR FUNCTION 2	V205	
PURÉE	SEMI-SOLIDS	SOLIDS	CRACKER	BOTTLE	TRAINER CUP	CUP	PASS 1	FAIL 2	
								V206 A B C D E F G	

APPENDIX J EXPLANATION OF THE SOMA ORAL-MOTOR CATEGORIES (Reilly et al., 1995)



APPENDIX K REFERRAL LETTER FOR PARTICIPANTS FOR ADDITIONAL TREATMENT



**UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA**

Faculty of Humanities
Department of Speech-Language Pathology and Audiology

Date: _____

Dear parent/ caregiver

Thank you for your participation in the research study titled: "Prevalence and nature of feeding problems in a primary health care clinic in Gauteng". As you are aware, one of the benefits of participation in this research study is therapeutic referral, if deemed necessary by the researcher, to an allied health care professional. During the evaluation it was noted that your baby may need therapy.

We would like to refer your baby, _____ to:

PROFESSIONAL PERSON:	REASON:
Audiologist	Complete hearing evaluation
Occupational therapist	Gross and fine motor evaluation
Speech-language therapist	Communication assessment and follow- up
	Feeding assessment and follow-up
Other:	

We urge you to attend to this problem as soon as possible at Mamelodi Hospital, 012 841 8300.

If you would like more information please contact me at 072 929 0036.

Kind regards,



Nichole Fuls
Researcher



Esedra Krüger
Supervisor



Dr Jeannie van der Linde
Supervisor







Prof B Virck
HEAD: Dept. of Speech-Language Pathology
and Audiology

Communication Pathology Building
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APPENDIX L DEVELOPMENTAL SPEECH AND FEEDING MILESTONE HANDOUTS

<h2 style="text-align: center;">6 – 9 MONTHS</h2>  <p>Your baby should:</p> <ul style="list-style-type: none"> • Be able to eat soft solids, like cereal, pureed fruits and vegetables. • Be able to drink from a cup at 6 months • Should be able to open their mouths when you bring the spoon to their mouth. • Should use their upper lip to clean food off the spoon • At nine months your baby can try drinking from a straw.  <p>You should:</p> <ul style="list-style-type: none"> • Introduce solids at 6 months, giving your baby one new food at a time. • Introduce cup drinking at 6 months. • Feed your baby with a spoon. • Not limit your baby's food choices, give your baby a wide variety of foods. • Start introducing dissolvable soft cookies and ground or lumpy solids. • Introduce straw drinking at 9 months. 	<h2 style="text-align: center;">9 - 12 MONTHS</h2>  <p>Your baby should:</p> <ul style="list-style-type: none"> • Be able to eat mashed or chopped table foods with noticeable lumps. • Be drinking mostly from a cup. • Bottle and breast feeding may continue for bedtime. • Be able to bite through a soft cookie by 12 months. <p>You should:</p> <ul style="list-style-type: none"> • Introduce mashed or chopped food with lumps. • Use a cup for drinking liquids, but may still use a bottle or breast to feed during bedtime. • Not limit your baby's food choices, give your baby a wide variety of foods. • Introduce soft cookies or harder ones (depending on the presence of teeth) at 12 months. 
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APPENDIX M PROOF OF ACCEPTANCE TO THE JOURNAL OF PEDIATRICS AND CHILD
HEALTH



Nichole Fuls <nicholefuls@gmail.com>

Production: Your article accepted in Journal of Paediatrics and Child Health

1 message

cs-author@wiley.com <cs-author@wiley.com>
To: nicholefuls@gmail.com

Sat, Feb 8, 2020 at 11:32 PM

Dear Nichole Fuls,

Article ID: JPC14823
Article DOI: 10.1111/jpc.14823
Internal Article ID: 16688115
Article: Feeding characteristics of infants in a lower-middle income country
Journal: Journal of Paediatrics and Child Health

Congratulations on the acceptance of your article for publication in Journal of Paediatrics and Child Health.

Your article has been received and the production process is now underway. We look forward to working with you and publishing your article. Using Wiley Author Services, you can track your article's progress.

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Sincerely,
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