

BREASTFEEDING KNOWLEDGE AND CLINICAL MANAGEMENT AMONG SPEECH-
LANGUAGE PATHOLOGISTS

Adara N. Blake

A thesis submitted to the faculty at the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Science in the Division of Speech and Hearing Sciences (Speech-Language Pathology) in the School of Medicine.

Chapel Hill
2014

Approved by:

Cara McComish

Elizabeth Crais

Suzanne Thoyre

© 2014
Adara N. Blake
ALL RIGHTS RESERVED

ABSTRACT

Adara N. Blake: Breastfeeding Knowledge and Clinical Management among Speech-Language Pathologists

(Under the direction of Cara McComish)

As healthcare professionals with training in dysphagia, speech-language pathologists (SLPs) are potentially valuable team members in the management of breastfeeding issues. This survey aimed to describe the clinical breastfeeding knowledge, skills, and experiences of SLPs who provide pediatric swallowing and/or feeding services. Knowledge of breastfeeding information was variable among participants. The majority indicated that they frequently encounter breastfeeding issues in their practice, but many felt that they did not have adequate knowledge and skills to address these issues. SLPs expressed interest in increasing their breastfeeding competence, but indicated a lack of resources for education including limited professional development opportunities offered by the American Speech-Language-Hearing Association (ASHA). Responses indicate a need and desire for professional development in breastfeeding management among SLPs. Recognition of the importance of breastfeeding competence from ASHA would establish a precedent for the availability of pre-service and continuing education.

ACKNOWLEDGEMENTS

To my advisor and mentor, Cara McComish, thank you for your gentle guidance. Not only have you helped me through this thesis project, but through my entire graduate experience as my academic advisor. I am so grateful for your patience and insight.

Thank you to Elizabeth Crais and Suzanne Thoyre, for rounding out my committee and helping to focus my ideas and writing with your feedback. I have been astounded at the level of attention you have given me during this time, as I know you were also working on many important projects of your own.

A special thank you to Krisi Brackett and Jamie Mahurin Smith for test driving my survey and helping me to finalize it.

Finally, to all of my loved ones. Without you, I may not have had the confidence to see this project through. Thank you for your support and encouragement as I took on this endeavor.

TABLE OF CONTENTS

LIST OF TABLES	vii
LIST OF FIGURES	viii
LIST OF ABBREVIATIONS.....	ix
CHAPTER 1: INTRODUCTION	1
CHAPTER 2: LITERATURE REVIEW	2
Breastfeeding in the United States.....	2
Speech-Language Pathologists and Pediatric Feeding Disorders.....	4
The American Speech-Language-Hearing Association’s Published Breastfeeding Statements.....	6
Speech-Language Pathologists and Breastfeeding in the Literature.....	10
CHAPTER 3: METHOD	14
Survey Development.....	14
Participant Recruitment	16
CHAPTER 4: RESULTS	17
Demographic Information.....	17
Breastfeeding Knowledge.....	19
Experiences with Breastfeeding Management.....	21
CHAPTER 5: DISCUSSION.....	31
Demographic Information.....	32
Implications for Education.....	33

Role of the American Speech-Language-Hearing Association	34
Implications for Practice	35
Implications for Further Research	36
Limitations	36
CHAPTER 6: CONCLUSION	38
APPENDIX A: RECRUITMENT MESSAGE.....	39
APPENDIX B: SURVEY	40
REFERENCES	50

LIST OF TABLES

Table 1: Frequency of Breastfeeding Issues in Clinical Practice	23
Table 2: Participant Comments on Collaboration with Lactation Consultants.....	27
Table 3: Participant Comments on Resources for Breastfeeding Education	28
Table 4: Preferred Resources for Breastfeeding Education	29
Table 5: Preferred Content Areas for Breastfeeding Education	30

LIST OF FIGURES

Figure 1: Geographic Location of Participants	18
Figure 2: Self-Described Breastfeeding Competence.....	22
Figure 3: Areas Targeted During an Evaluation of Breastfeeding	24
Figure 4: Frequency of Collaboration with Other Professionals	25

LIST OF ABBREVIATIONS

ASHA	American Speech-Language-Hearing Association
CCC-SLP	Certificate of Clinical Competence for Speech-Language Pathologists
CLC	Certified Lactation Counselor
IBCLC	International Board Certified Lactation Consultant
IBLCE	International Board of Lactation Consultant Examiners
SLP	Speech-Language Pathologist

CHAPTER 1: INTRODUCTION

In 2011, United States Surgeon General Regina M. Benjamin and the Department of Health and Human Services released a *Call to Action* detailing “the important roles and responsibilities of clinicians, employers, communities, researchers, and government leaders and to urge us all to take on a commitment to enable mothers to meet their personal goals for breastfeeding.” International Board Certified Lactation Consultants (IBCLC’s) are the health professionals most thoroughly trained in the clinical management of lactation, and as such are usually the first line of defense in addressing breastfeeding concerns (US Department of Health and Human Services, 2011). However, there are feeding and swallowing issues that sometimes go beyond the scope or experience of an individual IBCLC. As medical professionals with “knowledge and skills in assessment and management of swallowing and feeding problems in infants and young children” (ASHA, 2002), speech-language pathologists who work as pediatric feeding therapists are in a uniquely qualified position to collaborate with IBCLCs and contribute their knowledge of dysphagia in order to best serve families.

This thesis aims to describe the current state of knowledge and clinical management of breastfeeding concerns among speech-language pathologists. Understanding the existing roles and responsibilities of speech-language pathologists is the first step to recruiting more SLP’s for the clinical management of breastfeeding and ultimately increasing positive breastfeeding outcomes.

CHAPTER 2: LITERATURE REVIEW

Breastfeeding in the United States

The health benefits of breastfeeding have been well established. In a systematic review of existing literature, Ip, et al. (2007) concluded that even in developed countries, a history of breastfeeding was associated with reduced risk of acute otitis media, gastroenteritis, severe lower respiratory tract infections, atopic dermatitis, asthma, obesity, type 1 and type 2 diabetes, childhood leukemia, sudden infant death syndrome, and necrotizing enterocolitis. Premature infants have demonstrated readiness for oral feedings at breast earlier than for the bottle (Lemons and Lemons, 1996), and remain more physiologically stable at breast than at bottle (Bier, et al., 1993; Goldfield, Richardson, Lee and Margetts, 2006). Maternal benefits include decreased risk of type 1 diabetes, and breast and ovarian cancer (Ip, et al., 2007). In developing countries breastfeeding is a life-saving practice, with dramatic reductions in infant mortality reported (WHO, 2001).

In accordance with the increase in knowledge of breastfeeding benefits, American breastfeeding rates have dramatically risen over the past several decades. According to The Centers for Disease Control and Prevention, between 1986 and 1988 54.1% of babies in the United States were ever breastfed, and 34.6% were still breastfeeding at 3 months or longer. By 2013, the CDC reported that 76.5% of babies in the United States were ever breastfed, 49.0% were still breastfeeding at 6 months and 27.0% were still breastfeeding at 12 months (CDC, 2013).

Despite increases in overall breastfeeding rates, significant disparities exist among socio-economic and ethnic groups. The most recent data collected by the CDC reflected that only 59.7% of black children were ever breastfed, compared to 73.8% of American Indian children, 77.7% of white children, 80.6% of Hispanic or Latino children, and 83% of Asian or Pacific Islander children. Household income was very predictive of breastfeeding, with the rate of babies ever breastfed ranging from 84.4% among households with a poverty income ratio of 350% or greater, to as little as 67% in households with a poverty income ratio of less than 100%. Mothers without a college education, unmarried mothers, and mothers under the age of 30 were also less likely to breastfeed (CDC, 2007).

Though these disparities exist, breastfeeding initiation among all groups continues to rise. However, with an increase in breastfeeding comes an inevitable increase in breastfeeding difficulties and the need for competent clinicians who can address these issues. Of women who discontinued breastfeeding within the first year of their child's life, 60% did so earlier than desired; issues such as nipple pain, ineffective milk transfer and infant weight gain were cited as reasons why (Odom, Li, Scanlon, Perrine & Grummer-Strawn, 2013).

But perhaps more important than the physical deterrents to breastfeeding success are the potential benefits of effective support from health care providers. Skilled support from health care professionals is positively associated with increased breastfeeding duration, particularly when that support is offered routinely and not just when mothers seek it (Renfrew, et al., 2012). As impactful as skilled support can be, the quality of that support is crucial. "Inadequate and conflicting advice by health professionals" can be a contributing factor in mothers' diminishing breastfeeding confidence (Dykes and Williams, 1999).

Not only does the literature show that support from health care professionals improves breastfeeding outcomes, but also that providers themselves agree that greater knowledge and skills in breastfeeding management will improve their service delivery. In a British learning needs assessment (McFadden, Renfrew, Dykes & Burt, 2006), 95% of representatives (unidentified by the authors) from various Royal Colleges and other professional organizations related to maternal and child health agreed that “care provided by their members could be enhanced by greater knowledge and expertise in the field of breastfeeding,” and that their “main contribution was to enhance their own members’ breastfeeding knowledge.” Efforts to increase this knowledge could be very beneficial, as health care providers initiate support more frequently when they are confident in their own knowledge (Burglehaus, Smith, Sheps and Green, 1997).

Speech-Language Pathologists and Pediatric Feeding Disorders

The role of speech-language pathologists in the treatment of swallowing and feeding disorders is fairly recent. With the advent of new research on clinical dysphagia management in the 1970’s, an increasing number of SLPs began to assess and treat adults. In 1987, the American Speech-Language-Hearing Association first developed official documents detailing the roles and responsibilities of speech-language pathologists regarding dysphagia treatment. Currently, ASHA outlines eight Standards for the Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP). Standard IV: Knowledge Outcomes consists of eight areas of knowledge that candidates must demonstrate in order to earn the CCC-SLP. Standard IV-B states “The applicant must have demonstrated knowledge of basic human communication and swallowing processes, including the appropriate biological, neurological, acoustic, psychological, developmental, and linguistic and cultural bases. The applicant must have demonstrated the ability to integrate information pertaining to normal and abnormal human development across

the life span” (ASHA, 2014). Standard IV-C states that “The applicant must have demonstrated knowledge of communication and swallowing disorders and differences...” (ASHA, 2014).

Over the years, increased need for dysphagia service provision across all settings has been reflected in an increase in graduate coursework and practicum placements. The distinct needs of the pediatric population have also become apparent, with a growing number of SLPs providing pediatric dysphagia services (ASHA, 2001). In a 2013 survey of speech-language pathologists working in health care settings, clinicians reported that of time spent providing pediatric services, a mean of 15% of time was spent on swallowing and feeding (ASHA, 2013). Population density affected areas of intervention, with 19.5% of time spent on swallowing and feeding in urban areas, versus 11.9% and 11.2% of time spent in suburban and rural areas respectively (ASHA, 2013).

The availability of pediatric dysphagia services is necessitated by the prevalence of pediatric feeding disorders. The percentage of typically developing children with some degree of a feeding disorder ranges from 25% (Manikam and Perman, 2000) to 35% (Burklow, Phelps, Schultz, McConnel & Rudolph, 1998), while Arvedson (2008) reports that up to 45% of children may be affected. Severe feeding disorders affect 3% to 10% of children (Manikam & Perman, 2000). Feeding disorders can arise from a variety of sources, including structural abnormalities, neurological conditions, behavioral issues, cardio-respiratory problems, and metabolic dysfunction (Burklow, Phelps, Schultz, McConnel & Rudolph, 1998). Some children have feeding difficulties from birth, as in the case of a child with a cleft lip or palate. Others may develop or become more apparent over time, such as in a child who has a difficult transition from liquids to solids. In addition, concomitant health issues increase the prevalence of feeding difficulty, with up to 80% of children with developmental disability affected, and children with

medical diagnoses, physical disabilities and prematurity affected at higher rates than typically developing children (Arvedson, 2008; Manikam & Perman, 2000).

Given these statistics and the continued increase in breastfeeding rates, it is inevitable that there will be breastfeeding dyads who contain a child with a feeding disorder. While an IBCLC may often resolve any breastfeeding issues that arise, there may be difficulties that extend beyond the scope of their training in dysphagia. In these situations, an SLP with competence in the management of breastfeeding could be the most appropriate professional to address the problem.

The American Speech-Language-Hearing Association's Published Breastfeeding Statements

In its mission statement, ASHA lists “setting standards” and “fostering excellence in professional practice” as two of its goals. In order to identify the American Speech-Language-Hearing Association's positions and contributions regarding the SLP's role in breastfeeding management, ASHA's position statements on dysphagia were reviewed for any mention of breastfeeding. Two major documents, *Roles of Speech-Language Pathologists in Swallowing and Feeding Disorders: Technical Report* (ASHA, 2001) and *Knowledge and Skills Needed by Speech-Language Pathologists Providing Services to Individuals with Swallowing and/or Feeding Disorders* (ASHA, 2002) make no explicit reference to breastfeeding. However, if we consider breastfeeding to be the normal physiological feeding process for infants, the basic competency of “normal and abnormal anatomy and physiology related to swallowing function” (ASHA, 2002) should be interpreted to include breastfeeding.

This assumption is supported by the texts referenced in *Graduate Curriculum on Swallowing and Swallowing Disorders (Adult and Pediatric Dysphagia)* (ASHA, 2007). While

breastfeeding is not included in a list of over 200 suggested lecture topics, two texts, two journal articles and one videotape focused on breastfeeding are listed under references for pediatric dysphagia. These include Dr. Ruth Lawrence's *Breastfeeding: A Guide for the Medical Profession* (2005) and Dr. Jack Newman's *The Ultimate Book of Breastfeeding Answers* (2000). The inclusion of these resources would suggest that ASHA expects breastfeeding to be taught alongside other topics relevant to the management of pediatric dysphagia.

The ASHA document that makes the most explicit reference to breastfeeding competency is the *Roles of Speech-Language Pathologists in the Neonatal Intensive Care Unit: Technical Report* (2004). This report includes in the role of feeding and swallowing evaluation and intervention the "evaluation of breast and bottle-feeding ability." Research supporting the safety and benefits of breastfeeding for very low birth weight infants is cited in the section "Outcomes with Feeding Focused Interventions." Breastfeeding is also included in a discussion of transitioning premature infants to oral feeding. In addition, breastfeeding is referenced as a caregiving practice that should be facilitated in the design of the NICU, such as providing rooming-in facilities so that mothers may breastfeed overnight. Research on the differences between breast and bottle feeding is cited in the "Infant Development" section.

The *Technical Report* (ASHA, 2004) does not just summarize relevant breastfeeding knowledge, but provides practical resources for professionals as well. While the authors indicate in the document that there is a lack of standardized assessments for breastfeeding readiness, they cite and describe ones that are available, including *Systematic Assessment of the Infant at Breast* (Association of Women's Health, Obstetric, and Neonatal Nurses, 1990) and the *Breastfeeding Evaluation* (Tobin, 1990). Under the heading "Instrumental Assessment," ultrasonography is presented as an objective, though not extensively used, study of feeding at the breast. Cervical

auscultation is presented as a non-standardized tool that can be used as an “adjunct to behavioral observations for appreciating breath sounds and timing of swallowing.” Holding infants skin-to-skin and non-nutritive sucking facilitation, such as allowing infants to suck at the emptied breast, are interventions described as beneficial for breastfeeding. The authors go on to present evidence on premature infants’ typical age of readiness for introducing breastfeeding, alternatives to the breast when the mother is not present in the NICU, and health benefits of breast milk. Definitions for lactation and nipple shield are included in the glossary, and breastfeeding is included in the definition of nutritive sucking.

In the companion to the technical report, *Roles and Responsibilities of the Speech-Language Pathologist in the Neonatal Intensive Care Unit: Guidelines* (2005), the authors take the research presented in the technical report and organize it by each role and responsibility – communication evaluation and intervention, feeding and swallowing evaluation and intervention, and parent/caregiver education and counseling. Most of the breastfeeding research from the technical report is discussed in the feeding and swallowing section.

While the discussion of breastfeeding is frequent and thorough in the technical report and reprised in the guidelines, it is important to recognize that the committee members who wrote these documents were only charged with describing the NICU. This may inadvertently lead professionals to believe that only clinicians who work in the NICU need have competence in breastfeeding management, despite its relevance to speech-language pathologists working in early intervention, private practices, or with full term children in the hospital setting.

Aside from the official practice documents, the ASHA website provides other resources such as conference presentations and research focused on breastfeeding. Entering the word “breastfeeding” into the search bar returns 17 Evidence Based Practice documents, 14

convention presentations, 4 articles in the ASHA Leader, 1 article published in the *Journal of Speech, Language, and Hearing Research*, and 1 mention in the Special Interest Group on Swallowing's newsletter. In addition to discussing many of the interventions presented in the *Technical Report* (ASHA, 2004), contributors to the Pediatric Dysphagia Practice Portal discuss considerations for thickening breast milk.

Another way to look at ASHA's focus on breastfeeding is to identify the number of sessions on the topic offered at the annual ASHA convention. In 2013, 3 out of 140 sessions on swallowing and swallowing disorders focused on breastfeeding management, one of which was withdrawn. The offerings at the 2012 convention were similar, with 2 of 123 swallowing sessions explicitly covering breastfeeding. Further, 0 out of 17 upcoming pediatric feeding continuing education courses listed on the ASHA website mention breastfeeding as a topic in the course.

Perhaps the most obvious plea for SLPs to provide breastfeeding services appeared in the ASHA Leader in 2005, when Fletcher and Ash argued that the knowledge and skills of speech-language pathologists in infant swallowing are key to addressing disordered breastfeeding. The authors also called for increased collaboration between SLP's and International Board Certified Lactation Consultants (IBCLC's) in order to provide optimal care. They suggested, "The SLP and the IBCLC bring both overlapping and unique skills to the table when assessing and treating infant feeding difficulties. An awareness and respect for each other's roles as well as forming a partnership will only improve the quality of care provided. Promoting and supporting consumption of breast milk via the most efficient method whether it is the breast or bottle will provide the infant with the optimal nutrition to promote brain growth and development" (Fletcher & Ash, 2005).

Speech-Language Pathologists and Breastfeeding in the Literature

While many texts on pediatric feeding acknowledge the benefits of breast milk and the importance of breastfeeding, they often lump breast and bottle feeding together with limited discussion of their differences; however, effort is made to provide some specific breastfeeding information. For example, Wolf and Glass (1992), occupational therapists, devote an entire chapter to breastfeeding with discussions of physiology, suck mechanics, considerations for the typical and hospitalized infant, and alternative methods of supplementation. Several helpful illustrations are also included. Elsewhere in the text is brief information on breastfeeding infants with oro-facial anomalies.

More recently, Morris and Klein (2000) mention in their text the possible issues a short lingual frenulum or a disordered suck may cause for the breastfeeding infant. The benefits of variations in breast milk flavor and fat content are repeated throughout the text as well. The authors suggest referral to a lactation consultant for breastfeeding issues in the same section that they recommend referral to a cardiologist, neurologist, gastroenterologist or pulmonologist when necessary, highlighting the significance of disordered breastfeeding. Breastfeeding the premature infant, alternatives for supplementation, supportive positioning techniques, and the pros and cons of demand versus scheduled feedings are also discussed. As did the other texts that were reviewed, Morris and Klein also include recommendations for breastfeeding infants with cleft lips and/or palates. A unique contribution that the authors make is to discuss the breastfeeding behaviors that may be seen in children with autism, such as avoiding touch to the face by refusing the breast or constant, perseverative feeding.

In their text on pediatric dysphagia, Arvedson and Brodsky (2002) include a brief description of suck mechanics during breastfeeding, recommend that breastfeeding mothers

eliminate dairy from the diet in the case of infant milk protein allergies, and include the American Academy of Pediatrics recommendations for breastfeeding duration (2000) and health benefits of exclusivity. The clinical usefulness of pre- and post-feeding weights is presented, as well as special considerations for pre-term infants and infants with clefts. Instrumentally, the ability to visualize the oral phase during breastfeeding using ultrasonography, and the inability to do so using videofluoroscopy are discussed.

Most recently, editor Kelly VanDahm (2012) compiled a pediatric dysphagia text with contributions from a variety of disciplines, including speech-language pathology, occupational therapy, physical therapy, and nutrition. Breastfeeding considerations are mentioned throughout, including descriptions of various positions, discussion of flow rate confusion, commenting on breastfeeding in a feeding assessment, strategies for adjusting flow rate at the breast, and the effects of oral-motor issues on breastfeeding. The benefits of collaborating with a lactation consultant are also discussed, with VanDahm stating that “The support of a lactation consultant can be a valuable asset to the feeding specialist. In many cases the perspective and training of the two clinicians is different, but the two can be effective teammates in a collaborative effort” (p.113).

There are currently very few published articles that discuss speech-language pathology in conjunction with breastfeeding management. In 2007, Sheppard and Fletcher published a review of available literature on facilitating oral skills in premature infants. Evidence that non-nutritive sucking supports successful breastfeeding was explored, as well as techniques for positioning. Several breastfeeding evaluations were presented, as well as ten steps for promoting and protecting breastfeeding adapted from the United Nations Baby Friendly Hospital Initiative and the American Academy of Pediatrics (Spatz, 2004).

Service delivery models for delivering breastfeeding support may vary. However, in numerous texts and articles, interdisciplinary teaming is presented as the ideal model. SLPs are mentioned as helpful members of an interdisciplinary breastfeeding support team, along with lactation consultants, dietitians and pediatricians (Falconer, 2010; Pillet, Pasty, Goyet, & Malfroy-Camine, 2012). Examples of ways SLPs have been involved in breastfeeding intervention teams include a meta-analysis of tongue tie research, in which the authors found that Australian surgeons performing frenotomies on infants received 16.9% of their referrals from speech-language pathologists (Edmunds, Miles & Fulbrook, 2011), while a speech-language pathologist administered the lingual frenulum protocol for another study (Martinelli, Marchesan, & Berretin-Felix, 2012). In a Portuguese study of preterm infants, the the authors found that a non-nutritive sucking protocol performed by speech-language pathologists aided in the direct transition of those infants from enteral feeding to breastfeeding (Medeiros, et al., 2011).

In another article published in *Seminars in Speech and Language* (Miller, 2011) the author identifies the speech-language pathologist as the ideal clinician for identifying, intervening in and modifying feeding difficulties typical among infants with craniofacial anomalies. Miller presents a short section on interventions for breastfeeding, and includes techniques such as upright positioning to avoid nasal regurgitation and teaching the mother to occlude the cleft lip with a finger. The author is positive about the breastfeeding potential of this special population, provides supporting evidence, and encourages speech-language pathologists to use their clinical judgment. The included list of references also contains three texts on breastfeeding infants with craniofacial anomalies that clinicians could utilize. However, with little to no foundational knowledge in or experience with breastfeeding, the average SLP has limited resources from which to form a clinical judgment.

Although there is a growing body of evidence to suggest that SLPs have knowledge and skills that might benefit breastfeeding dyads, there has been little exploration of the roles, if any, SLPs are currently taking in breastfeeding management. This thesis has three goals; to describe the breastfeeding knowledge and skills of speech-language pathologists who provide pediatric swallowing and/or feeding services, to describe the quality of collaboration between speech-language pathologists and other professionals regarding breastfeeding management, including lactation consultants, and to describe the current state of professional development, including ideal roles of the American Speech-Language-Hearing Association in promoting and facilitating breastfeeding competence among speech-language pathologists.

CHAPTER 3: METHOD

Survey Development

Very little information exists about the extent of the involvement of speech-language pathologists in breastfeeding management. Survey methodology was chosen in order to efficiently obtain general information about speech-language pathologists' experiences in this area. The survey was comprised of 39 questions divided into three categories – demographic information, breastfeeding management experiences, and breastfeeding knowledge and skills (See Appendix B). The categories were selected in order to identify the demographic characteristics of the clinicians who address breastfeeding issues, to identify their experiences in breastfeeding management, and to identify areas of breastfeeding knowledge that speech-language pathologists currently have, as well as those they may need more exposure to in pre-professional coursework and continuing education.

The content of the survey was developed in collaboration with two speech-language pathologists and professors with experience in pediatric dysphagia, and a nurse and professor specializing in infant feeding. The survey was piloted by two speech-language pathologists who specialize in pediatric dysphagia, one of whom is also an International Board Certified Lactation Consultant; survey questions were further refined using their feedback.

The survey methodology was also revised following consultation with the Odum Institute for Research in Social Science at the University of North Carolina at Chapel Hill. The survey was administered electronically through Qualtrics, and responses were recorded anonymously.

This project was submitted to and approved by the Institutional Review Board at the University of North Carolina at Chapel Hill.

Demographic information. Participants were asked general questions about their clinical practice, including state and population density where they practice, number of years practicing, and type of setting. These questions were used to determine whether any of these factors influenced the clinician's responses to the remainder of the survey.

Experiences with breastfeeding management. The bulk of the survey consisted of questions targeting participants' experiences. This project not only aimed to describe those experiences, but perhaps more importantly to determine if there is a desire from clinicians to expand their knowledge in this area. Identifying a gap in knowledge is important, but that gap cannot be sufficiently remediated without buy-in from clinicians; do they believe that increasing their breastfeeding knowledge is beneficial to them, and are they interested in doing so? Also included in this section were questions about the nature of participants' collaboration with other professionals in the management of breastfeeding.

Breastfeeding knowledge. The final section of the survey consisted of nine questions intended to identify which areas of breastfeeding knowledge survey respondents were familiar with, and which might need to be focused on in continuing education. These questions and their targeted responses were developed using information from the Core Curriculum for Lactation Consultant Practice (Mannel, Martens & Walker, 2013), a text developed by the International Board of Lactation Consultant Examiners as the primary reference for IBCLCs. Only content areas that would reasonably apply to a speech-language pathologist providing swallowing or feeding services were included.

Participant Recruitment

The primary recruitment source for this project was the American Speech-Language and Hearing Association's online discussion forums. A recruitment message (See Appendix A) was posted in the following forums: Special Interest Group 13: Swallowing, Swallowing Disorders and Dysphagia (10,651 subscribers), Early Intervention (1,856 subscribers), SLP Health Care (2,130 subscribers), SLP Private Practice (1,448 subscribers), and Research (1,311 subscribers). In addition, 21 feeding programs around the country for which a contact email could be identified were sent the recruitment message, with a request to forward that message to speech-language pathologists at the institution. A second round of recruitment messages were sent out three weeks after the initial postings and emails.

CHAPTER 4: RESULTS

In total, 97 survey responses were recorded. Participant inclusion was determined by the first survey question, which asked if the participant currently provides pediatric swallowing and/or feeding services. If their response was no, they were thanked for their participation and that survey was excluded from the results. Of the 97 completed surveys, 11 were excluded. The 86 remaining surveys were included in this analysis (89%).

Demographic Information

Geographic location. Of the 86 respondents, 78 (90.7%) indicated the state where they practice. States were further divided into the regions designated by the Census Bureau (United States Department of Commerce, 2013). Twenty-nine participants (37.1%) practice in the South, 17 (21.8%) practice in the Northeast, 16 (20.5%) practice in the Midwest, and 16 (20.5%) practiced in the West. See Figure 1 for a summary.

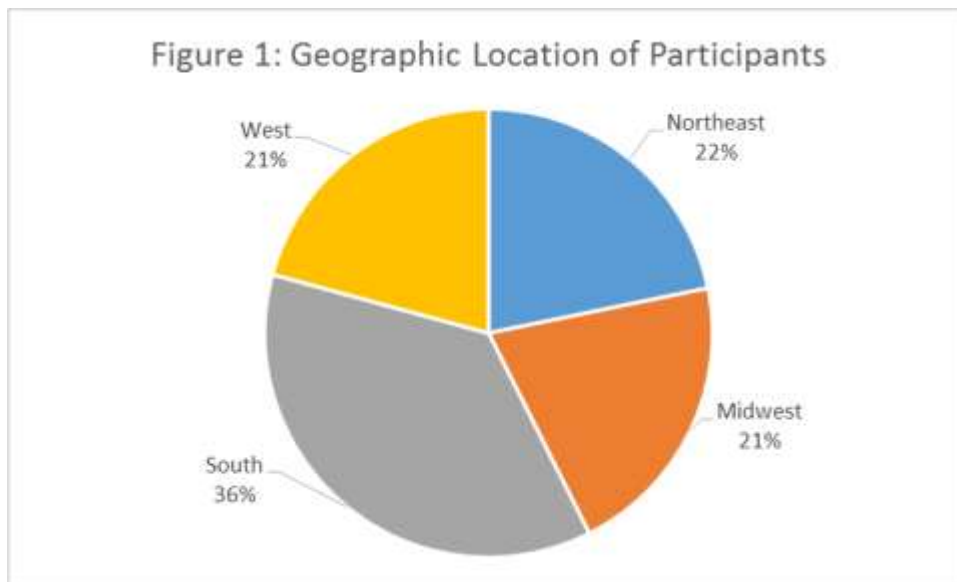


Figure 1: Geographic Location of Participants

Population density. All 86 respondents indicated the population density of the area where they primarily work. Forty-one (48%) participants practice in an urban area, 32 (37%) in a suburban area, and 13 (15%) in a rural area.

Clinical setting. Participants were asked to identify their primary practice setting. The majority of respondents (n=45, 52%) work in a hospital, 13 (15%) work in private practice, 9 (10%) in home health, and 7 (8%) in a rehabilitation setting. Twelve participants (14%) indicated “other,” and their text responses included outpatient clinics and university clinics.

Number of years practicing. Of the 86 respondents, 83 (96.5%) indicated the number of years they have been practicing as a speech-language pathologist. Ten participants (12%) had worked for 1 to 3 years, 29 (34.9%) had worked for 4 to 10 years, 26 (31.3%) had worked for 11 to 20 years, 13 (15.7%) had worked for 21 to 30 years, and 5 (6%) had worked for 31 years or more.

Swallowing and feeding caseload. Participants were asked to indicate what percentage of their total caseload consisted of pediatric swallowing and/or feeding services. All participants

responded. For 29 participants (34%), less than 25% of their caseload was swallowing or feeding. Fourteen (16%) indicated that distribution as 25% to 50% of their caseload, 10 (12%) indicated 51% to 75%, and 33 (38%) indicated that greater than 75% of their caseload consisted of swallowing or feeding.

IBCLC certification. Participants were asked if they held an International Board Certified Lactation Consultant certification; 85 of 86 participants responded. Of these, 4 (5%) were IBCLCs. In comments, one participants wrote that they completed the 40-hour Certified Lactation Counselor (CLC) program, and another wrote that they were a Certified Lactation Educator (CLE).

Breastfeeding Knowledge

Participants were asked a series of questions intended to identify areas of breastfeeding knowledge that were well known by speech-language pathologists. Responses would also indicate which areas were less familiar, and as such should be targeted in breastfeeding education.

When asked if infants were usually more coordinated at bottle than they are at breast, the majority of participants selected the targeted response of false (91%, n=78). Ninety-two percent of participants (n=79) selected the targeted response, “true,” when asked if non-nutritive sucking at the breast can be beneficial when transitioning infants to oral feeding at the breast.

For the question “which of the following is an appropriate intervention for poor milk transfer,” the targeted response was “dancer hold (supporting the breast and baby’s chin for increased jaw stability.” Fifty-one percent of participants (n=43) selected the targeted response. Twenty-nine percent (n=25) selected “side-lying position,” 18% (n=15) selected “increasing mom’s supply,” and 2% (n=2) selected “limiting time at the breast.”

Participants were asked “which of the following positions can be helpful for reducing milk flow? Check all that apply.” The targeted responses were “elevated clutch/football,” which 51% of participants (n=41) selected, and “laid back/prone,” which 55% (n=44) selected. Sixteen percent (n=13) selected “cross-cradle,” and 6% (n=5) selected “cradle.”

When asked “Which of the following can be signs of a poor latch? Check all that apply,” 75% of participants (n=64) chose “nipple pain that lasts longer than a week or that is felt throughout an entire feeding, 54% (n=46) chose “lipstick shaped or creased nipple after the baby detaches,” and 36% (n=31) chose “dimpling of the cheeks.” These were all targeted responses. “Frequent feeding” was chosen by 38% of participants (n=32), “widely flanged lips” was chosen by 34% (n=29), and “movement near baby’s temporal region/in front of the ear” was chosen by 9% (n=8).

Participants were asked to name one method of supplementation other than a bottle or tube feeding by entering their answer into a text box. Of note, this item had the least number of responses of the entire survey (n=48). Frequent responses included a supplemental nursing system (SNS), syringe/finger feeding, and cup feeding.

When asked “which of the following appropriately describes a typical growth trend in breastfed children,” 69% of participants (n=53) selected the targeted response “breastfed babies typically grow more quickly than formula fed babies from birth to 3 months, and less quickly than formula fed babies from 3 to 12 months.” “Formula fed babies are leaner than breastfed babies from 4 to 12 months” was selected by 17% (n=13), “breastfed babies often require supplementation when they start to fall off of the growth curve around 3 months” was selected by 10% (n=8), and “breastfed boys grow slightly slower than breastfed girls” was selected by 4% (n=3).

For the question “Which of the following can be reasons for clicking noises during feeding? Check all that apply,” the targeted responses were “ankyloglossia,” “infant trying to control flow of milk,” and “poor positioning/latch.” Eighty-seven percent of participants (n=73) selected “poor positioning/latch,” 56% (n=47) selected “ankyloglossia,” and 40% (n=34) selected “infant trying to control flow of milk.” Of the incorrect responses, 17% (n=14) selected “insufficient milk supply,” and 7% (n=14) selected “strong tongue.”

Finally, participants were asked “which of the following is an appropriate intervention for infants with laryngomalacia and/or tracheomalacia (floppy laryngeal or tracheal anatomy that can cause airway obstruction)?” Thirty percent of participants (n=25) selected the targeted response of “head extension and prone positioning.” Sixty-five percent (n=53) selected “side lying position” and 5% (n=4) selected “fewer, longer feedings.”

Experiences with Breastfeeding Management.

The following section includes questions that were intended to determine whether speech-language pathologists encountered breastfeeding issues in their practice and, if so, describe the nature of these encounters.

Current breastfeeding competence. Participants were asked to select the statement that best described their clinical breastfeeding management knowledge and skills. Forty-seven percent (n=40) indicated that they had “sufficient clinical knowledge of breastfeeding to address concerns that might come up in my practice,” while 41% (n=35) indicated that they possessed “some clinical knowledge of breastfeeding, but would refer concerns to another professional.” Ten participants (n=9) reported “advanced knowledge, skills, and experience with breastfeeding management,” and 2% (n=2) reported “little to no clinical knowledge of breastfeeding.” See Figure 2 for a summary.

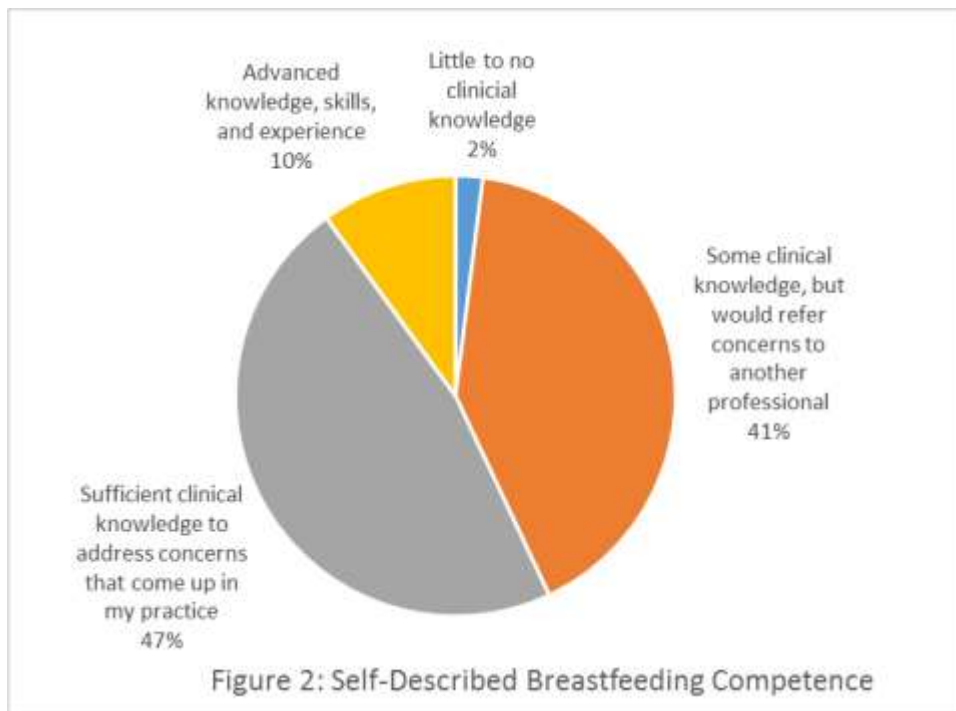


Figure 2: Self-Described Breastfeeding Competence

When asked to indicate all sources of breastfeeding knowledge, 93% (n=78) selected “personal experience and/or self-directed education,” 79% (n=66) selected “collaboration with other knowledgeable professionals,” 50% (n=42) selected “continuing education course(s),” and 19% (n=16) selected “inservice education provided by my employer.” Only 4% (n=3) had received any graduate school instruction on breastfeeding, and 7% (n=6) had exposure to breastfeeding issues during their graduate school practicum. Eleven percent of participants (n=9) indicated “other” sources of breastfeeding knowledge, and among the specified responses were completion of lactation training programs, articles, books, and on the job training.

When asked whether increased competence in breastfeeding management would benefit their practice, 87% (n=75) of participants responded yes. Participants were also asked if they had a personal interest in increasing their clinical breastfeeding knowledge and skills; 91% (n=78) responded yes.

Current breastfeeding management. To gain information on the amount of breastfeeding management that SLPs provide, participants were asked to indicate how often they encounter breastfeeding issues in their practice. The majority of respondents indicated that they encountered breastfeeding issues “once per month or less” (44%, n=37). However, nearly a quarter indicated that they encountered breastfeeding issues “more than once per week” (24%, n=20). See Table 1 for a summary.

Table 1

Frequency of Breastfeeding Issues in Clinical Practice

Frequency	n	%
Never	7	8%
Once per month or less	37	44%
More than once per month	18	21%
Once per week	3	4%
More than once per week	20	24%
Total	85	

Clinicians who worked in hospital settings reported seeing a greater number of breastfeeding issues than clinicians working in other settings. For participants who saw these problems “more than once per week,” 19 out of 20 (95%) worked in a hospital.

When asked to select statements that best described the nature of the breastfeeding concerns they encounter, participants most frequently selected “infant nutrition and weight gain” (76%, n=61), “breastfeeding a baby with medical issues” (75%, n=60), “latch” (70%, n=56), and “suck” (66%, n=53). “Positioning” (50%, n=40) and “milk transfer” (39%, n=31) followed. Nineteen percent (n=15) specified “other” concerns, including tongue tie, suck/swallow/breathe coordination, aspiration, and weaning.

Participants were asked to select areas they would focus on during an evaluation of breastfeeding. Ninety-four percent (n=81) chose “coordination of suck/swallow/breathe,” 90%

(n=77) chose “infant oral anatomy,” and an equal number (86%, n=74) chose “feeding readiness” and “positioning.” Eighty-four percent (n=72) selected “latch,” 65% (n=56) selected “intake and output history,” and 58% (n=50) selected “lactation history.” Twenty-four percent (n=21) specified “other” topics, including maternal and infant medical history, flow rate, and signs/symptoms of aspiration. Mother’s comfort, stress and amount of support were also specified as considerations by 6% of participants. Two participants wrote that they would not perform an evaluation of breastfeeding. See Figure 3 for summary.

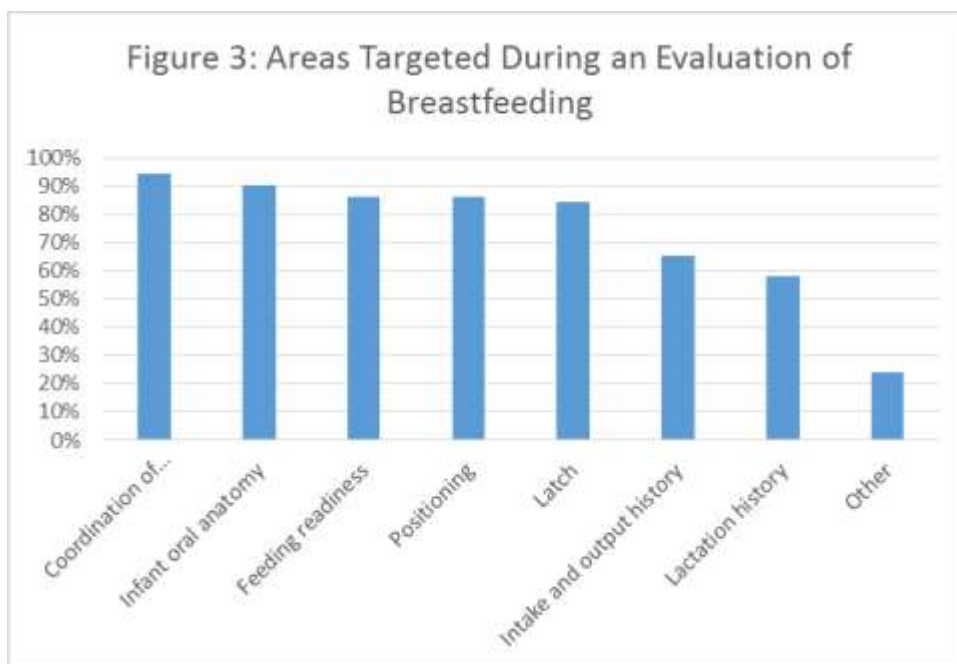


Figure 3: Areas Targeted During Evaluation of Breastfeeding

When asked to select areas they would feel comfortable targeting for intervention, participants most frequently selected “coordination of suck/swallow/breathe” (96%, n=81), “positioning” (89%, n=75), “feeding readiness” (88%, n=74), and “structural anomalies (such as cleft lip, tongue tie)” (81%, n=68). Sixty percent (n=50) selected “latch,” and 45% (n=38) selected “supplementation.” Eight percent (n=7) specified “other” areas, including managing milk supply and maternal stress.

Collaboration with other professionals. Participants were asked if they had ever received a breastfeeding referral from another professional; 60% (n=52) responded yes. Participants were asked to select the statement that best described the nature of their collaboration with other professionals regarding breastfeeding support. Thirty-two percent (n=27) responded that they “occasionally collaborate with other professionals,” and 28% (n=24) responded that they “frequently collaborate with other professionals.” Sixteen percent (n=14) of participants indicated that they “work on a team” with other professionals when it comes to breastfeeding management. See Figure 4 for a summary.

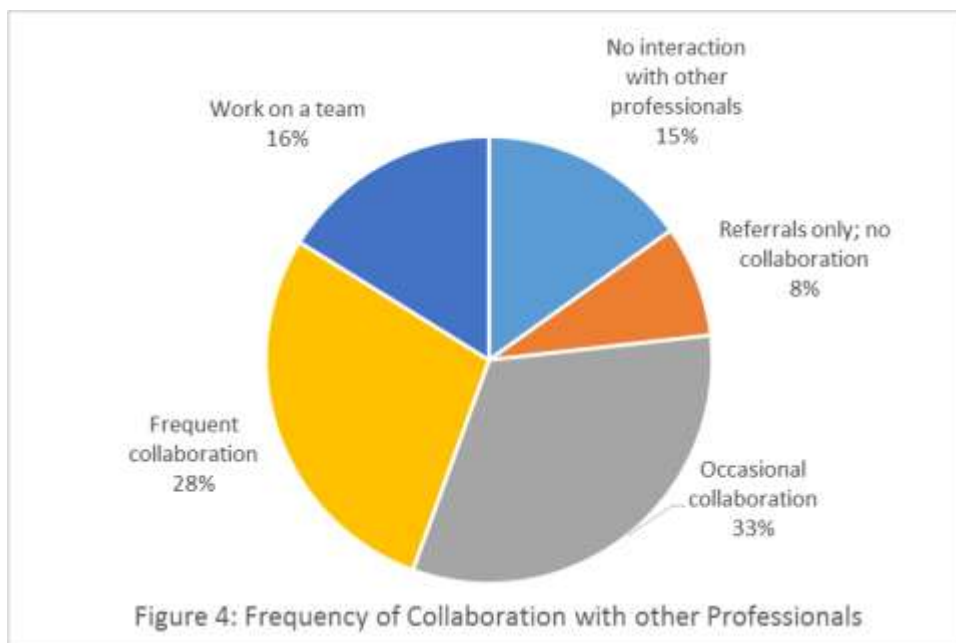


Figure 4: Frequency of Collaboration with Other Professionals

When asked what types of professionals they have collaborated with about breastfeeding concerns, participants indicated that they’ve worked with lactation consultants (82%, n=53), pediatricians (77%, n=50), nurses (66%, n=43), dietitians (55%, n=36), another speech-language pathologist (46%, n=30), and occupational therapists (37%, n=24). Twenty-three percent (n=15) indicated that they had collaborated with “other” professionals, including physical therapists,

neonatologists, otolaryngologists, and pediatric gastroenterologists. One participant commented, "...as an SLP, I thought I myself was knowledgeable enough to nurse my infant daughter, but had to seek the help of a lactation consultant... As a profession we should put more focus on teaming with pediatricians and lactation consultants to support all mothers in nursing."

Participants were also asked specifically about their collaboration with International Board Certified Lactation Consultants (if they indicated earlier that they were an IBCLC, these questions were skipped). When asked if there was an IBCLC available for referral in their community, 48% (n=39) selected "Yes; an IBCLC is employed by my workplace," and 28% (n=23) selected "Yes; there is an IBCLC in my community who I can refer clients to." Six percent (n=5) indicated that there was not an IBCLC available for referral, and 18% (n=15) indicated that they were not sure. Seventy-one percent of participants (n=58) reported they referred a client to an IBCLC. Fifty-one percent of participants (n=44) indicated they received a referral from an IBCLC. See Table 2 for participant comments.

Table 2

Participant Comments on Collaboration with Lactation Consultants

“Often, I will attempt to problem solve through issues that arise. If my knowledge isn’t sufficient, I refer to lactation. For inpatients, I will often attempt to provide a co-evaluation with lactation. Often, my knowledge is sufficient for the motor aspects of feeding, but I more frequently refer to lactation for issues with milk supply, breast milk storage, nutrition for nursing mothers, and pumping issues.”

“I have had the opportunity to work with a number of our lactation specialists during evaluation/treatment sessions. While this can at times be a bit challenging because we come at problems from different perspectives, it’s also been very informative for both the lactation specialists and myself. I have learned a lot about the mother’s side of the equation from the lac [sic] specialist.”

“At our center – a large pediatric hospital, ALL assessments by an SLP of breastfeeding dyad [sic] are done in conjunction with an IBCLC.”

“In the 2 large children’s hospitals I have worked in I have also had access to lactation consultants. At the first hospital I worked at we worked very closely with the lactation consultant, co-treating frequently, but in my current hospital our interaction is significantly less...”

When asked if they were satisfied with their current level of collaboration with other professionals regarding management of breastfeeding issues, 65% of participants (n=56) indicated that they would like to collaborate more often with other professionals. Thirty-four percent (n=29) were satisfied with their current level of collaboration, and only one wanted less collaboration with other professionals. Clinicians who occasionally collaborated with other professionals indicated the desire for increased collaboration more than clinicians who reported other frequencies of collaboration (40%, n=22).

Importance of breastfeeding competence. Sixty-four percent of participants (n=55) indicated that understanding the anatomy, physiology, and mechanics of breastfeeding is very important for competence in normal and abnormal swallow function, while 33% (n=28) indicated that it is moderately important and only 3% (n=3) felt that it is minimally important. No participants felt that it is not at all important.

Forty-four percent of participants (n=38) indicated that the ability to manage breastfeeding issues is very important for competence in providing treatment for swallowing and/or feeding disorders, while 48% (n=41) felt that it is moderately important. Only 8% (n=7) indicated that this skill was minimally important, and none indicated that it was not at all important.

Opportunities for professional development. When asked if they felt there were currently enough resources for increasing their clinical breastfeeding skills, 72% (n=61) of participants indicated that there were not, and 28% (n=24) indicated that there were. See Table 3 for participant comments regarding breastfeeding education.

Table 3

Participant Comments on Resources for Breastfeeding Education

“The minimal amount of breastfeeding I’ve learned has been via CEU courses. AHEC [Allied Health Education Centers] and local hospitals frequently offer good basic courses on breastfeeding but I’ve also had training with live subjects. There’s very little in the SLP CEU world on infants, breastfeeding, and dysphagia anyhow! It’s gotten better since I’ve graduated, but it’s difficult without hands on experience.”

“...It makes little sense that most of the graduate coursework focuses on bottle feeding with mere mentions of breast feeding...”

Participants were then asked to select which resources for professional development they would take advantage of if they were available. The most popular choices were “online module” (73%, n=62), “3-hour workshop in my area” (72%, n=61), “ASHA short course” (67%, n=57), “full day workshop” (66%, n=56), and “shadowing a knowledgeable professional” (54%, n=46). Other selections included “graduate school instruction” (24%, n=20), and “journal club” (18%, n=15). For the choice of “other,” one participant specified books as a potential resource, while another expressed interest in taking the five day Certified Lactation Counselor (CLC) certification course. See Table 4 for a summary.

Table 4

Preferred Resources for Breastfeeding Education

Resource	n	%
Online module	62	73%
3-hour workshop in my area	61	72%
ASHA short course	57	67%
Full day workshop	56	66%
Shadowing a knowledgeable professional	46	54%
Graduate school instruction	20	24%
Other	3	4%
Total	85	

Participants were asked to select all topic areas related to breastfeeding management that they would like to see covered in continuing education. The listed topics were chosen from the Core Curriculum for Lactation Consultant Practice (Mannel, Martens & Walker, 2013), with consideration of which topics were likely to be encountered by speech-language pathologists. Ninety-one percent of participants (n=78) selected techniques as an area to be addressed, 88% of participants (n=76) selected infants with special needs, and 71% (n=61) selected nutrition. Equipment and technology was chosen by 69% of respondents (n=59), followed by anatomy and physiology (62%, n=53). Topics suggested in the “other” category (7%, n=6) included tongue tie, prematurity, pumping, pharmacology, and collaboration with other professionals. See Table 5 for a summary.

Table 5

Preferred Content Areas for Breastfeeding Education

Content Area	n	%
Techniques	78	91%
Special needs infants	76	88%
Nutrition	61	71%
Equipment and technology	59	69%
Anatomy and physiology	53	62%
Total	86	

Role of the American Speech-Language-Hearing association. Participants were asked how well they felt ASHA promotes and facilitates breastfeeding knowledge among speech-language pathologists. Fifty percent (n=43) felt that breastfeeding knowledge was not at all promoted or facilitated by ASHA, 40% (34) indicated “only a little,” and 10% (n=9) chose “somewhat.” No participants felt that ASHA promotes or facilitates breastfeeding knowledge “very well.”

CHAPTER 5: DISCUSSION

As the benefits of breastfeeding continue to become more widely recognized as a matter of public health, the promotion and protection of breastfeeding also increases. From the Joint Commission's implementation of breastfeeding measures (United States Breastfeeding Committee, 2010), to the surgeon general's *Call to Action* (US Department of Health and Human Services, 2011), there is a rising expectation that all healthcare workers will be compliant with practices that support breastfeeding. As medical professionals with specialized training and a scope of practice that includes dysphagia management, speech-language pathologists are in a unique position to provide assistance with issues that may arise within the breastfeeding dyad – issues that will only become more prevalent as more families choose to initiate and continue breastfeeding. This survey aimed to describe the knowledge, skills, and experience of SLPs who provide pediatric dysphagia services with regard to the management of breastfeeding problems.

To date, very little information regarding the role of the SLP in breastfeeding management has been available. This survey yielded useful information regarding a group of SLPs who provide pediatric dysphagia services and their demographic characteristics; breastfeeding knowledge, skills and experiences; the nature of their collaboration with other professionals regarding these problems; and their experiences with professional development in breastfeeding.

Demographic Information

The geographic distribution of SLPs who took part in this study was fairly representative of the United States population. The greater number of Southern participants reflects the larger population of this region (Mackun & Wilson, 2011).

In contrast, participants in this survey provided a greater amount of dysphagia services when compared to the average speech-language pathologist. ASHA's 2013 survey of SLPs in health care settings found that for pediatric clinicians a mean of 15% of time was spent on swallowing and feeding, with that amount increasing to 19% for clinicians working in urban areas. While 34% of participants in the current study indicated that a quarter or less of their caseload consisted of feeding or swallowing, 38% indicated that dysphagia made up 75% or more of their caseload. These differences in caseload are not surprising given that the exclusion criterion for participation was provision of pediatric feeding or swallowing services. ASHA's survey targeted all SLPs, and many do not ever provide dysphagia services. Despite a different caseload distribution compared to the general population of pediatric SLPs, the entire range was represented in the sample.

In terms of International Board Certified Lactation Consultant certification rates, 5% of survey respondents indicated that they held the IBCLC certification. While the International Board of Lactation Consultant Examiners (IBCLE) could not provide a breakdown of members by discipline, the results of this survey seem to indicate that there are very few speech-language pathologists who are also IBCLCs. The certification is more typically held by nurses and dietitians. However, IBCLE includes speech-language pathologists in its list of "Recognized Health Professions," and as such they do not have to complete the health sciences education required for certification. In this way, IBLCE recognizes the rigorous academic background of

SLPs and encourages their certification as lactation consultants. This survey helps confirm the existence of SLP-IBCLCs, who could be an invaluable resource in the promotion of breastfeeding competence within the field of speech-language pathology.

Implications for Education

While many participants described themselves as having sufficient clinical knowledge to address the breastfeeding concerns in their practice, a similar number indicated that they had some clinical knowledge, but would refer breastfeeding concerns to another professional. This perceived level of competence was also reflected in responses to the knowledge questions. While the target responses were generally selected more often, incorrect responses were also frequently chosen. For example, more than a third of participants thought that widely flanged lips, often considered to be a classic characteristic of a good latch onto the breast, were actually a sign of a poor latch. Regardless of the level of intervention that an SLP will attempt, all SLPs who provide pediatric dysphagia services should have a thorough understanding of the mechanics and physiology of breastfeeding.

Most participants reported interest in increasing their knowledge and skills in breastfeeding, and felt that this increased knowledge would benefit their practice. Despite this interest, 72% of participants felt there were not enough resources for increasing their breastfeeding knowledge and skills. This mismatch in reported interest, perceived benefit, and availability of resources reveals a gap in pre-service and continuing education for speech-language pathologists. These gaps should be seen as opportunities to advance knowledge, and improve practice standards and actual practice within the profession.

The inclusion of basic breastfeeding information in graduate level dysphagia coursework would be a huge step toward remediating this gap in knowledge. Even a cursory background in

the mechanics of breastfeeding would help the practicing speech-language pathologist to at least identify that there is an issue and refer to someone with more experience, or seek to learn more about it. For those SLPs who routinely address pediatric dysphagia and are already working, continuing education could help them become more skilled in a topic area. This information could be valuable as, according to the participants of this survey, some SLPs experience these issues as frequently as several times per week. In terms of desirable forms of continuing education, participants indicated that online modules, 3-hour or full day workshops, and short courses at the ASHA convention would all be useful. Hospitals and the SLPs who work there might be an ideal target for these programs, as almost all participants who frequently saw breastfeeding issues reported working in the hospital setting. Conversely, because hospital based SLPs are more likely to have a lactation specialist available to them, clinicians in other settings may benefit more from increased knowledge and skills in breastfeeding, as they may have fewer available resources.

Role of the American Speech-Language-Hearing Association.

There is a need and a desire for more resources to be developed in the interest of furthering the breastfeeding knowledge of speech-language pathologists. But how do we encourage the production of these resources? As the primary professional organization for speech-language pathologists, ASHA sets the professional standards for the field. While most participants of the current survey felt that ASHA does not adequately promote or facilitate breastfeeding competency, the organization is constantly revising and expanding its views and policies. Basic competency in breastfeeding can and should be included in the Knowledge and Skills Acquisition standards, as part of swallowing competence. The inclusion of these standards would indicate to graduate programs that they need to add breastfeeding topics to their

curriculum, would encourage employers to provide continuing education in this area, and would suggest to practicing SLPs that they should pursue continuing education in breastfeeding if that knowledge and skills are not in their repertoire.

Implications for Practice

Another salient result of this survey was the reported importance of collaboration with other professionals. When asked where their breastfeeding knowledge came from, 79% of participants indicated that it came from collaboration with other knowledgeable professionals. Sixty-five percent of those who took the survey wanted increased collaboration with others. The participants in this survey seemed to value and gain from these professional interactions.

As suggested by many professionals, interdisciplinary teaming is the ideal model of service delivery for addressing the many interrelated systems that might affect feeding (VanDahm, 2012; Arvedson, 2008). Not only does teaming benefit the client, teaming also benefits the clinicians by providing the opportunity for them to learn from colleagues from another discipline in the context of a case they are mutually invested in serving. However, only 16% of participants indicated that they addressed breastfeeding issues within a team. Breastfeeding issues are feeding issues, and effort should be made to follow evidence-based practice and address these problems using a team approach when possible.

However, in a description of interdisciplinary teams, ASHA (2014) notes that “the ideal service delivery model requires that participants share a common perspective...” While professional collaborations such as teaming or shadowing are likely very beneficial for the development of speech-language pathologists’ clinical breastfeeding skills, their value is contingent on the SLP and their fellow professionals having a shared, basic knowledge of breastfeeding. Exposure to lactation consultants in graduate courses, with the opportunity to

shadow and collaborate with them in practicum placements, would help facilitate this shared perspective.

Implications for Further Research

As a result of the current study, there is evidence that a number of SLPs who provide pediatric dysphagia services encounter breastfeeding difficulties when serving their clients. Therefore, closer examination of those encounters is warranted. More detailed descriptions of what issues arise, in what contexts, and how they are handled would help less experienced SLPs apply that knowledge to their own clinical work. It would also be helpful to differentiate the SLP's management of breastfeeding from that of other professionals, so that roles are not redundant and each type of breastfeeding issue could be routed to the person best equipped to handle it. Additionally, it might be beneficial to study the effect of continuing education on SLP's perceived competence and implementation of breastfeeding strategies.

Limitations

There are a few limitations to the current study that need mention. First, the sample of clinicians represented in this study may not be representative of all SLPs who provide pediatric feeding and/or swallowing services. As the survey respondents were self-selecting, it is possible that the results were biased positively toward increasing breastfeeding competence because only clinicians with positive experiences or some interest in clinical breastfeeding management may have responded to the recruitment message. Clinicians who had neutral or negative opinions regarding professional breastfeeding management may not have chosen to participate. Without knowing what selection bias may have occurred, a more representative sample might have been achieved by making the survey more general to pediatric swallowing and/or feeding, and then asking a few breastfeeding related questions within the broader context.

Another limitation of the survey was a potential mismatch between terminology that speech-language pathologists use and lactation terminology. This was apparent in the knowledge questions that offered “side-lying position” as a choice. In speech-language pathology, side-lying may refer to a position for bottle feeding frequently used with premature infants in the NICU setting. This is different from the side-lying breastfeeding position, which can be a more difficult position to master and might not be suggested for infants who need more support during feeding.

CHAPTER 6: CONCLUSION

The promotion of breastfeeding as the biological and cultural norm in the United States is an effort that continues to grow each year. Crucial in the successful promotion of breastfeeding is the widespread availability of adequate support from knowledgeable professionals. Speech-language pathologists are professionals with specific skills in pediatric swallowing and feeding, and these skills can and should be complementary to the management of breastfeeding. With the right training and experience, SLPs could have a unique advantage in handling issues that may arise within a breastfeeding dyad. Even in situations where intervention is not necessary, it is prudent that all healthcare providers who work with young children have at least a basic working knowledge of breastfeeding. This would also help address the issue of conflicting breastfeeding advice among health care providers, as presented in the review of literature.

This survey identified that speech-language pathologists providing feeding and swallowing services do encounter breastfeeding issues and that there is an interest and benefit for increasing their competence in the management of these issues. However there is a gap between this interest and benefit, and the currently available opportunities for professional development at both the graduate and continuing education levels. Increased recognition of this area of practice by the American Speech-Language-Hearing Association could encourage the creation of new resources specifically targeted to SLPs and others who provide breastfeeding management services. The knowledge and skills that would result from access to quality graduate and continuing education has the potential to benefit both the profession, and those who the profession exists to serve.

APPENDIX A: RECRUITMENT MESSAGE

Do you provide pediatric swallowing and/or feeding services?

Hello! I am an MS-SLP candidate at the University of North Carolina at Chapel Hill and am completing a thesis. My goal is to describe the breastfeeding knowledge and skills of speech-language pathologists, their clinical experiences with providing breastfeeding services, opportunities for continuing education, and collaboration with other professionals. If you provide pediatric swallowing and/or feeding services, please consider taking this brief survey. It will take approximately 15 minutes to complete and your responses will be recorded anonymously.

To participate, please follow the link below. Thank you!

https://unc.az1.qualtrics.com/SE/?SID=SV_6huWNgKPNhPmv6l

Adara Blake, IBCLC

MS Candidate, Speech-Language Pathology
The University of North Carolina at Chapel Hill
adara_blake@med.unc.edu

APPENDIX B: SURVEY

This survey is being conducted as part of a thesis project by Adara Blake, Masters of Science candidate in Speech-Language Pathology at the University of North Carolina at Chapel Hill. The purpose of this study is to describe the clinical breastfeeding experiences of speech-language pathologists who provide pediatric swallowing and/or feeding disorders. This survey should take about 15 minutes to complete and responses will be recorded anonymously. No risks or discomforts are anticipated from taking part in this study. Your participation is voluntary and you may leave any question blank if you choose not to answer. You may choose to discontinue the survey at any time. You may change your responses by using the back button to return to previous questions. If cookies are enabled on your browser, your responses will be preserved should you close the survey and return to it at a later date. If cookies are not enabled, you may still return to the survey at a later time but your previous responses will not be preserved. You will be warned when you are about to submit your responses to be recorded. Once recorded, you will not be able to change your responses. By beginning the survey, you acknowledge your agreement to participate in this research. If you have concerns or questions about this study, please contact Adara Blake at adara_blake@med.unc.edu.

Do you provide pediatric feeding and/or swallowing services?

- ☐ Yes
- ☐ No

In which state do you practice?

- ☐ Alabama
- ☐ Alaska
- ☐ Arizona
- ☐ Arkansas
- ☐ California
- ☐ Colorado
- ☐ Connecticut
- ☐ Delaware
- ☐ Florida
- ☐ Georgia
- ☐ Hawaii
- ☐ Idaho
- ☐ Illinois
- ☐ Indiana
- ☐ Iowa
- ☐ Kansas
- ☐ Kentucky
- ☐ Louisiana
- ☐ Maine
- ☐ Maryland
- ☐ Massachusetts
- ☐ Michigan
- ☐ Minnesota
- ☐ Mississippi
- ☐ Missouri
- ☐ Montana
- ☐ Nebraska
- ☐ Nevada
- ☐ New Hampshire
- ☐ New Jersey
- ☐ New Mexico
- ☐ New York
- ☐ North Carolina
- ☐ North Dakota
- ☐ Ohio
- ☐ Oklahoma
- ☐ Oregon
- ☐ Pennsylvania
- ☐ Rhode Island

- ☐ South Carolina
- ☐ South Dakota
- ☐ Tennessee
- ☐ Texas
- ☐ Utah
- ☐ Vermont
- ☐ Virginia
- ☐ Washington
- ☐ West Virginia
- ☐ Wisconsin
- ☐ Wyoming

Which of the following best describes the area where you primarily work?

- ☐ Urban
- ☐ Suburban
- ☐ Rural

What setting do you primarily practice in?

- ☐ Hospital
- ☐ Private practice
- ☐ Home health
- ☐ Rehabilitation center
- ☐ Other (please specify): _____

For how much of your caseload do you provide pediatric swallowing and/or feeding services?

- ☐ Less than 25% of my caseload
- ☐ 25% to 50% of my caseload
- ☐ 51% to 75% of my caseload
- ☐ Greater than 75% of my caseload

For how many years have you been practicing as a speech-language pathologist?

Are you an International Board Certified Lactation Consultant (IBCLC)?

- ☐ Yes
- ☐ No

How important do you think understanding the anatomy, physiology and mechanics of breastfeeding are for competence in normal and abnormal swallowing function?

- ☐ Not at all
- ☐ Minimally important
- ☐ Moderately important
- ☐ Very important

How important do you think the ability to manage breastfeeding issues is for competence in providing treatment for swallowing and/or feeding disorders?

- ☐ Not at all
- ☐ Minimally important
- ☐ Moderately important
- ☐ Very important

How well do you feel that ASHA promotes and facilitates breastfeeding knowledge among speech-language pathologists?

- ☐ Not at all
- ☐ Only a little
- ☐ Somewhat
- ☐ Very well

How frequently do you encounter breastfeeding issues in your practice?

- ☐ Never
- ☐ Once per month or less
- ☐ More than once per month
- ☐ Once per week
- ☐ More than once per week

What is the nature of these breastfeeding concerns? Check all that apply.

- ☐ Latch
- ☐ Positioning
- ☐ Milk transfer
- ☐ Infant nutrition and weight gain
- ☐ Breastfeeding a baby with medical issues
- ☐ Other (please specify): _____
- ☐ Suck

Which of the following best describes your clinical knowledge of breastfeeding?

- ☐ Little to no clinical knowledge of breastfeeding
- ☐ Some clinical knowledge of breastfeeding, but would refer concerns to another professional
- ☐ Sufficient clinical knowledge of breastfeeding to address concerns that come up in my practice
- ☐ Advanced knowledge, skills, and experience with breastfeeding management

Each clinician may take a slightly different approach during an evaluation. Which of the following would you focus on in an evaluation of breastfeeding? Check all that apply.

- ☐ Lactation history
- ☐ Infant oral anatomy
- ☐ Feeding readiness
- ☐ Positioning
- ☐ Latch
- ☐ Coordination of suck/swallow/breathe
- ☐ Intake and output history
- ☐ Other (please specify): _____

Which of the following areas would you feel comfortable targeting for intervention? Check all that apply.

- ☐ Feeding readiness
- ☐ Positioning
- ☐ Latch
- ☐ Coordination of suck/swallow/breathe
- ☐ Supplementation
- ☐ Structural anomalies (such as cleft lip, tongue tie)
- ☐ Other (please specify): _____

Please record any additional comments about your experiences with breastfeeding evaluation and/or intervention:

Is there an International Board Certified Lactation Consultant (IBCLC) available for referrals in your community?

- ☐ Yes; an IBCLC is employed by my workplace
- ☐ Yes; there is an IBCLC in my community who I can refer clients to
- ☐ No
- ☐ Not sure

Have you ever referred a client with breastfeeding concerns to an International Board Certified Lactation Consultant (IBCLC)?

- ☐ Yes
- ☐ No

Have you ever received a referral from an International Board Certified Lactation Consultant (IBCLC)?

- ☐ Yes
- ☐ No

Have you ever received a breastfeeding referral from another professional?

- ☐ Yes
- ☐ No

How would you describe your collaboration with other professionals regarding breastfeeding management of clients?

- ☐ No interaction with other professionals regarding breastfeeding
- ☐ Referrals only from other professionals; no collaboration
- ☐ Occasionally collaborate with other professionals
- ☐ Frequently collaborate with other professionals
- ☐ Work on a team

Which types of professionals have you collaborated with regarding the breastfeeding management of clients? Check all that apply.

- ☐ Pediatrician
- ☐ Occupational therapist
- ☐ Another speech-language pathologist
- ☐ Dietician
- ☐ Nursing
- ☐ Other (please specify): _____
- ☐ Lactation consultant

Thinking about your current practice, would you like to collaborate with other professionals more often, less often, or are you satisfied with your current level of collaboration when it comes to management of breastfeeding issues?

- ☐ More often
- ☐ Less often
- ☐ Satisfied with my current level of collaboration

From what sources did your breastfeeding knowledge derive? Check all that apply.

- ☐ Personal experience and/or self-directed education
- ☐ Graduate school curriculum
- ☐ Graduate school practicum
- ☐ Continuing education course(s)
- ☐ Inservice education provided by my employer
- ☐ Collaboration with other knowledgeable professionals
- ☐ Other (please specify): _____

Are you interested in increasing your clinical breastfeeding knowledge and skills?

- ☐ Yes
- ☐ No

Would increased competence in breastfeeding management benefit your practice?

- ☐ Yes
- ☐ No

Do you feel there are currently enough resources for increasing your clinical breastfeeding skills?

- ☐ Yes
- ☐ No

What resources for breastfeeding education would you take advantage of, if they were available to you? Check all that apply.

- ☐ Graduate school instruction
- ☐ Journal club
- ☐ Online module
- ☐ Shadowing a knowledgeable professional
- ☐ 3-hour workshop in my area
- ☐ Full day workshop
- ☐ ASHA short course
- ☐ Other (please specify): _____

What content areas would you like to see covered in continuing education? Check all that apply.

- ☐ Anatomy and physiology
- ☐ Nutrition
- ☐ Techniques
- ☐ Equipment and technology
- ☐ Special needs infants
- ☐ Other (please specify): _____

The following questions are designed to gauge your familiarity with certain breastfeeding topics that may be relevant to you as a speech-language pathologist who provides swallowing and/or feeding services. Please answer to the best of your knowledge.

Infants are usually more coordinated at bottle than they are at breast.

- ☐ True
- ☐ False*

Non-nutritive sucking at the empty breast can be beneficial when transitioning infants to oral feeding at the breast.

- ☐ True*
- ☐ False

Which of the following is an appropriate intervention for poor milk transfer?

- ☐ Increasing mom's supply
- ☐ Dancer hold (supporting the breast and baby's chin for increased jaw stability)*
- ☐ Side lying position
- ☐ Limiting time at the breast

Which of the following positions can be helpful for reducing milk flow? Check all that apply.

- ☐ Elevated clutch/football*
- ☐ Cradle
- ☐ Laid back/prone*
- ☐ Cross-cradle

Which of the following can be signs of a poor latch? Check all that apply.

- ☐ Movement near baby's temporal region/in front of the ear
- ☐ Dimpling of the cheeks*
- ☐ Lipstick shaped or creased nipple after baby detaches*
- ☐ Widely flanged lips
- ☐ Frequent feeding
- ☐ Nipple pain that lasts longer than a week or that is felt throughout an entire feeding*

Name one method of supplementation other than a bottle or tube feeding.

Which of the following appropriately describes a typical growth trend in breastfed children?

- ☐ Breastfed babies often require supplementation when they start to fall off of the growth curve around 3 months.
- ☐ Formula fed babies are leaner than breastfed babies from 4 to 12 months.
- ☐ Breastfed boys grow slightly slower than breastfed girls.
- ☐ Breastfed babies typically grow more quickly than formula fed babies from birth to 3 months, and less quickly than formula fed babies from 3 to 12 months.*

Which of the following can be reasons for clicking noises during feeding? Check all that apply.

- ☐ Ankyloglossia*
- ☐ Strong tongue
- ☐ Insufficient milk supply
- ☐ Infant trying to control flow of milk*
- ☐ Poor positioning/latch*

Which of the following is an appropriate intervention for infants with laryngomalacia and/or tracheomalacia (floppy laryngeal or tracheal anatomy that can cause airway obstruction)?

- ☐ Side lying position
- ☐ Head extension and prone positioning*
- ☐ Fewer, longer feedings

Are there any topics or issues not addressed in the survey that you would like to comment on?

Please note that you have reached the end of the survey. **By advancing to the next page, your responses will be recorded.** If you would like to change or review your responses, please use the back button. If cookies are enabled on your browser, your responses will be preserved should you close this page and return to the survey at a later date. If cookies are not enabled, you may still return to the survey at a later time but your previous responses will not be preserved.

REFERENCES

- American Academy of Pediatrics Committee on Nutrition. (2000). Hypoallergenic infant formulas. *Pediatrics*, 106, 346-349.
- American Speech-Language-Hearing Association. (2001). *Roles of speech-language pathologists in swallowing and feeding disorders: technical report* [Technical report]. Retrieved from <http://www.asha.org/policy/TR2001-00150/>
- American Speech-Language-Hearing Association. (2002). *Knowledge and skills needed by speech-language pathologists providing services to individuals with swallowing and/or feeding disorders* [Knowledge and Skills]. Retrieved from <http://www.asha.org/policy/KS2002-00079/>
- American Speech-Language-Hearing Association. (2004). *Roles of speech-language pathologists in the neonatal intensive care unit: technical report* [Technical report]. Retrieved from <http://www.asha.org/policy/PS2004-00111/>
- American Speech-Language-Hearing Association. (2005). *Roles and responsibilities of speech-language pathologists in the neonatal intensive care unit: guidelines* [Guidelines]. Retrieved from <http://www.asha.org/policy/GL2005-00060/>
- American Speech-Language-Hearing Association. (2007). *Graduate curriculum on swallowing and swallowing disorders (adult and pediatric dysphagia)* [Technical report]. Retrieved from <http://www.asha.org/policy/TR2007-00280.htm>
- American Speech-Language-Hearing Association. (2013). *SLP health care survey*. Retrieved from <http://www.asha.org/uploadedFiles/2013-SLP-Health-Care-Survey-Summary-Report.pdf>
- American Speech-Language-Hearing Association. (2014). *2014 standards and implementation procedures for the certificate of clinical competence in speech-language pathology*. Retrieved from <http://www.asha.org/Certification/2014-Speech-Language-Pathology-Certification-Standards/>
- American Speech-Language-Hearing Association. (2014). *Interdisciplinary teams*. Retrieved from <http://www.asha.org/NJC/faqs-interdisciplinary.htm>
- Arvedson, J.C., and Brodsky, L. (1993). *Pediatric swallowing and feeding: Assessment and management*. San Diego, California: Singular Publishing Group, Inc.
- Arvedson, J.C. (2008). Assessment of pediatric dysphagia and feeding disorders: Clinical and instrumental approaches. *Developmental Disabilities Research Reviews*, 14(2), 118-127. Retrieved from <http://eds.b.ebscohost.com.libproxy.lib.unc.edu/ehost/pdfviewer/pdfviewer?sid=7bfc34cf-8f8e-40f1-b4e8-29364dbb659a@sessionmgr114&vid=4&hid=102>

- Bier, J.B., Ferguson, A., Anderson, L., Solomon, E., Voltas, C., Oh, W., & Vohr, B.R. (1993). Breast-feeding of very low birth weight infants. *Journal of Pediatrics*, 123, 773-778. Retrieved from http://ac.els-cdn.com/S0022347605808583/1-s2.0-S0022347605808583-main.pdf?_tid=5e0ff2a6-606d-11e3-927300000aab0f02&acdnat=1386551039_b8094b34166164d2367b205306ce8bcf
- Burglehaus, M., Smith, L., Sheps, S., & Green, L. (1997). Physicians and breastfeeding: Beliefs, knowledge, self-efficacy and counselling practices. *Canadian Journal of Public Health*, 88(6), 383-387. Retrieved from <http://journal.cpha.ca.libproxy.lib.unc.edu/index.php/cjph/article/view/961/961>
- Burklow, K., Phelps, A., Schultz, J., McConnel, K., & Rudolph, C. (1998). Classifying complex pediatric feeding disorders. *Journal of Pediatric Gastroenterology & Nutrition*, 27(2), 143-147. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/9702643>
- Centers for Disease Control and Prevention. (1995). *National survey of family growth: cycle 5*. Retrieved from <http://www.cdc.gov/nchs/data/hus/2010/014.pdf>
- Centers for Disease Control and Prevention. (2013.) *Breastfeeding report card*. Retrieved from <http://www.cdc.gov/breastfeeding/pdf/2013BreastfeedingReportCard.pdf>
- Centers for Disease Control and Prevention. (2013, July 31). *Provisional breastfeeding rates by socio-demographic factors, among children born in 2007*. Retrieved from http://www.cdc.gov/breastfeeding/data/NIS_data/2007/socio-demographic_any.htm
- Dykes, F., & Williams, C. (1999). Falling by the wayside: A phenomenological exploration of perceived breast-milk inadequacy in lactating women. *Midwifery*, 15(4), 232-246. Retrieved from http://ac.els-cdn.com/S0266613899901857/1-s2.0-S0266613899901857-main.pdf?_tid=e124f464-5ef8-11e3-acfb-00000aab0f26&acdnat=1386391057_84e3d5bed5ad8ad91a740c05829fec94
- Dykes, F. (2006). The education of health practitioners supporting breastfeeding women: Time for critical reflection. *Maternal & Child Nutrition*, 2(4), 204-216. doi: 10.1111/j.1740-8709.2006.00071.x
- Edmunds, J., Miles, S., & Fulbrook, P. (2011). Tongue-tie and breastfeeding: a review of the literature. *Breastfeeding Review*, 19(1), 19-26. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/21608523>
- Falconer, J. (2010). Gastro-oesophageal reflux and gastrooesophageal reflux disease in infants and children. *The Journal of Family Health Care*, 20(5), 175-177. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/21158357>

- Fletcher, K. & Ash, B. (2005, February 8). The speech-language pathologist and the lactation consultant: The baby's feeding dream team. *The ASHA Leader*, Retrieved from <http://www.asha.org/Publications/leader/2005/050208/f050208b.htm>
- Goldfield, E., Richardson, M., Lee, K., & Margetts, S. (2006). Coordination of sucking, swallowing, and breathing, and oxygen saturation during early infant breast-feeding and bottle-feeding. *Pediatric Research*, (60), 450-455. doi: 10.1203/01.pdr.0000238378.24238.9d
- Ip, S., Chung, M., Raman, G., Chew, P., Magula, N., DeVine, D., ... Lau, J. U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality. (2007). *Breastfeeding and maternal and infant health outcomes in developed countries* (07-E007). Retrieved from: <http://www.ncbi.nlm.nih.gov/books/NBK38337/>
- Lemons, P.K., & Lemons, J.A. (1996). Transition to breast/bottle feedings: The premature infant. *Journal of the American College of Nutrition*, 15, 126-135. doi: 10.1080/07315724.1996.10718577
- Mackun, P., & Wilson, S. United States Department of Commerce, Census Bureau. (2011). *Population distribution and change: 2000 to 2010* (C2010BR-01). Retrieved from: <http://www.census.gov/prod/cen2010/briefs/c2010br-01.pdf>
- Manikam, R., & Perman, J. (2000). Pediatric feeding disorders. *Journal of Clinical Gastroenterology*, 30(1), 34-46. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10636208>
- Mannel, R., Martens, P., & Walker, M. (2013). *Core curriculum for lactation consultant practice*. (3rd ed.). Burlington, MA: Jones & Bartlett Learning.
- Martinelli, R., Marchesan, I., & Berretin-Felix, G. (2012). Lingual frenulum protocol with scores for infants. *International Journal of Orofacial Myotomy*, 38, 104-112. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/23362754>
- McFadden, A., Renfrew, A., Dykes, F., & Burt, S. (2006). Assessing learning needs for breastfeeding: Setting the scene. *Maternal & Child Nutrition*, 2(4), 196-203. doi: 10.1111/j.1740-8709.2006.00072.x
- Medeiros, A., Oliveira, A., Fernandes, A., Guardachoni, G., Aquino, J., Rubinick, M., ... Gabriel, T. (2011). Characterization of the transition technique from enteral tube feeding to breastfeeding in preterm newborns. *Jornal de Sociedade Brasileira de Fonoaudiologia*, 23(1), 57-65. Retrieved from http://www.scielo.br/pdf/jsbf/v23n1/en_v23n1a13.pdf
- Miller, C. (2011). Feeding issues and interventions in infants and children with clefts and craniofacial syndromes. *Seminars in Speech and Language*, 32(2), 115-126. doi: 10.1055

- Morris, S.E., and Klein, M.D. (2000). *Pre-feeding skills: Second edition*. Austin, Texas: Pro-Ed Inc.
- Odom, E., Li, R., Scanlon, K., Perrine, C., & Grummer-Strawn, L. (2013). Reasons for earlier than desired cessation of breastfeeding. *Pediatrics*, 131(3), 726-732. doi: 10.1542
- Pillet, F., Pasty, B., Goyet, A., & Malfroy-Camine, C. (2012). The role of hospital care partners in promoting breastfeeding. *Soins: Pédiatrie, Puericulture*, (266), 23-24. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/23016214>
- Renfrew, M., McFadden, A., Dykes, F., Wallace, L., Abott, S., Burt, S., & Anderson, J. (2006). Addressing the learning deficit in breastfeeding: Strategies for change. *Maternal & Child Nutrition*, 2(4), 239-244. doi: 10.1111/j.1740-8709.2006.00068.x
- Renfrew, M., McCormick, F., Wade, A., Quinn, B., & Dowswell, T. (2012). Support for healthy breastfeeding mothers with healthy term babies. *Cochrane Pregnancy and Childbirth Group*, doi: 10.1002/14651858.CD001141.pub4
- Sheppard, J., & Fletcher, K. (2007). Evidence-based interventions for breast and bottle feeding in the neonatal intensive care unit. *Seminars in Speech and Language*, 28(3), 204-212. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/17647132>
- Spatz, D. (2004). Ten steps for promoting and protecting breastfeeding for vulnerable infants. *Journal of Perinatal and Neonatal Nursing*, 18(4), 385-396. Retrieved from <http://vb3lk7eb4t.search.serialssolutions.com/?sid=Entrez:PubMed&id=pmid:15646308>
- United States Breastfeeding Committee. (2010). *Implementing the joint commission perinatal care core measure on exclusive breast milk feeding*. Washington, DC: United States Breastfeeding Committee; 2010. Retrieved from <http://www.usbreastfeeding.org/Portals/0/Coalitions/2010-NCSBC/BTT-Handouts/BTT-29-Handout.pdf>
- United States Department of Commerce, Census Bureau. (2013). *Census regions and divisions of the United States*. Retrieved from website: http://www.census.gov/geo/maps-data/maps/pdfs/reference/us_regdiv.pdf
- United States Department of Health and Human Services, Office of the Surgeon General. (2011). *The surgeon general's call to action to support breastfeeding* (CS213420). Retrieved from: <http://www.surgeongeneral.gov/library/calls/breastfeeding/calltoactiontosupportbreastfeeding.pdf>
- VanDahm, K. (2012). *Pediatric feeding disorders: Evaluation and treatment*. Framingham, Massachusetts: Therapro.

Wolf, L.S., and Glass, R.P. (1992). *Feeding and swallowing disorders in infancy: Assessment and management*. San Antonio, Texas: Therapy Skill Builders.

World Health Organization. (2001). Effect of breastfeeding on infant and child mortality due to infectious diseases in less developed countries: a pooled analysis. WHO collaborative study team on the role of breastfeeding on the prevention of infant mortality. *The Lancet*, 355(9202), 451-455. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0140673699062601>