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The Impact of In-Home Lactation Support on Breastfeeding Self-efficacy, Duration, and
Exclusivity

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Abstract

While there is evidence to suggest that hospital lactation support impacts rates of breastfeeding initiation by new mothers, women may benefit from additional lactation support and intervention to meet Healthy People 2020 goals for breastfeeding duration and exclusivity. Breastfeeding self-efficacy can be targeted by lactation counselors to improve breastfeeding outcomes. The purpose of this study was to determine how in-home lactation support influences breastfeeding self-efficacy, duration, and exclusivity. A descriptive, cross-sectional, survey-based design with convenience sampling was used in the study, in which a one-time, voluntary, electronic survey with a retrospective pretest-posttest was emailed to postpartum women who received in-home lactation support from a Middle Tennessee community-based lactation support company. Data were collected from the responses of the 57 participants. Self-efficacy scores were significantly higher after the visit with in-home lactation support than before ($p \leq 0.001$). Breastfeeding self-efficacy was a significant predictor of breastfeeding duration ($p=0.014$) and exclusivity ($p=0.001$). In-home lactation support during the early postpartum period can lead to higher breastfeeding self-efficacy and longer breastfeeding duration and exclusivity. Healthcare professionals should make mothers aware of lactation support resource options prenatally and postpartum. Cost is a barrier to receive lactation support, but using a lactation counselor is cost-effective long-term. Insurers should reimburse lactation support to improve access for those who cannot afford it. Improving access can reduce disparities in rates of breastfeeding.

Background

Reduced rates of breastfeeding are a public health concern due to the many missed associated benefits of breastfeeding for the health of both mother and child (American Academy of Pediatrics (AAP), 2012; Centers for Disease Control and Prevention (CDC), 2016a). The AAP (2012) and CDC (2016a) recommend exclusive breastfeeding for six months, followed by continued breastfeeding for one year or longer while complementary foods are introduced. Objectives of Healthy People 2020 include increasing the proportion of infants who are ever breastfed, as well as those who are breastfed at six months, one year, exclusively through three months, and exclusively through six months (U.S. Department of Health and Human Services, 2017). Despite high initiation rates for breastfeeding, most states still do not meet the Healthy People 2020 target rates for breastfeeding duration and exclusivity, with current national averages showing attrition from the 81.1% of infants whose mothers initiate breastfeeding, down to 30.7% of infants who are breastfed through one year and 22.3% of infants who are breastfed exclusively through six months (CDC, 2016a).

The high breastfeeding initiation rate in the U.S. suggests that most mothers both desire and attempt to breastfeed; however, low duration and exclusivity suggest mothers are not able to continue breastfeeding as recommended (CDC, 2016a). The US Preventive Services Task Force (USPSTF, 2016) recommends providing interventions prenatally and postpartum to support breastfeeding in a way that enables mothers to make an informed decision about how to feed their infants and to do so successfully. It is well known that lactation consultants improve breastfeeding rates (Bonuck et al., 2014; Patel & Patel, 2016), and breastfeeding education and support interventions increase any and exclusive breastfeeding rates (Haroon, Das, Salam, Imdad, & Bhutta, 2013; USPSTF, 2016). Certified lactation counselors (CLC) are professionals in breastfeeding counseling and provide lactation support in obstetric and pediatric practices,

hospitals, public health programs, and independent practices (Academy of Lactation Policy and Practice, Inc., n.d.a).

Professional lactation support, including that which is provided by lactation counselors, can be received by mothers over the telephone, at a maternity facility, and in the mother's home (U.S. Department of Health and Human Services, 2011; USPSTF, 2016). According to a study by McKeever et al. (2002), in-home lactation support led to more women breastfeeding exclusively within twelve days postpartum. In a study by Habibi et al. (2012), mothers were less trusting of technology, such as video, internet, or telephone, and preferred in-person lactation support interventions. Stevens et al. (2006) found that breastfeeding support at home was no more costly than support from lactation consultants in the hospital setting, and benefits of home-based care include being in a familiar and comfortable environment.

Breastfeeding is a learned behavior, and thus, mothers need support to establish and sustain recommended breastfeeding practices (U.S. Department of Health and Human Services, 2011; World Health Organization, 2017). Low continuation and exclusivity rates have been associated with a lack of support from family, employers, and healthcare providers (CDC, 2016a). Common breastfeeding barriers in the U.S. include lack of knowledge about benefits and how to breastfeed, decreased family and social support, embarrassment with feeding in public, returning to work with poor support from employers, inadequate support from healthcare providers, and lactation difficulties, which include sore nipples, engorged breasts, mastitis, pain, leaking, failure to latch, and concern about insufficient milk supply (U.S. Department of Health and Human Services, 2011).

Targeted strategies to support the breastfeeding mother after discharge and during the first month postpartum are imperative, as are interventions that support the nursing mother's

return to work (U.S. Department of Health and Human Services, 2011). A systematic review of lactation support found that breastfeeding interventions using lactation consultants and counselors increase the number of women initiating breastfeeding, improve any breastfeeding rates, and impact exclusive breastfeeding rates (Patel & Patel, 2016). The care that women receive postpartum with multiple transitions is often fragmented or nonexistent relative to their needs, and if women need healthcare services, they often must pack up their car seat, diaper bag, and infant, all while potentially exhausted, anxious, and physically uncomfortable after delivering a baby (King, 2013). Home-based breastfeeding support is associated with maternal satisfaction, breastfeeding confidence, and increased breastfeeding duration (Stevens et al., 2006). Higher breastfeeding self-efficacy, or maternal confidence in one's ability to breastfeed successfully, is one modifiable factor during the early postpartum period that is predictive of longer breastfeeding duration (Laliberté et al., 2016; Tsai, Huang, & Lee, 2015).

Problem Statement

The support of a lactation counselor directly targets a woman's breastfeeding self-efficacy and is associated with an improvement in multiple breastfeeding outcomes. Lactation support can be delivered to women both in their homes and in an outpatient or hospital setting, but there is limited research documenting the experience of women receiving in-home support, specifically as it relates to their evolving breastfeeding self-efficacy.

Purpose/Objectives/Aims

The purpose of this study was to determine how in-home lactation support influences breastfeeding self-efficacy, duration, and exclusivity. We hypothesize that a lactation counselor will improve breastfeeding self-efficacy, and higher breastfeeding self-efficacy will be associated with longer duration and exclusivity. Bandura's (1977) self-efficacy theory will serve

as the framework for examining the relationship between the support provided by in-home lactation counselors, mother's confidence, and breastfeeding outcomes in the early postpartum period.

Review of Evidence

The early postpartum period is a critical time to establish and support breastfeeding practices (CDC, 2016a). Challenges with breastfeeding occur most commonly during the early postpartum period (Teich et al., 2014). Two weeks after delivery is a particularly critical period of potential early breastfeeding cessation due to the physical difficulties that arise and intensify at this time (Loke & Chan, 2013; Tsai, Huang, & Lee, 2015). During this period, mothers are exhausted, recovering from birth, learning how to manage the addition of a newborn, and breastfeeding every two to three hours (Gutowski, Walker, & Chetwynd, 2014). Milk is produced in larger amounts between two to four days postpartum, and the infant typically returns to birth weight by two weeks postpartum, or further assessment or intervention may be required (World Health Organization, 2009). Breastfeeding takes approximately 70-80% of mothers' days in the beginning, which can be difficult without much support (King, 2013). An intervention is often needed soon after discharge for lactation support (Loke & Chan, 2013). Home interventions during early postpartum are important due to it being a critical time for establishing breastfeeding (Wood, Woods, Blackburn, & Sanders, 2016). Lactation consultants can better help women two to five days postpartum rather than focusing their support immediately postpartum (King, 2013).

Returning to work or school is a barrier to exclusive breastfeeding (Bai, Fong, and Tarrant, 2015; Tsai, Huang, & Lee, 2015), as mothers often face inflexible schedules, a lack of private locations for pumping, and limited maternity leave benefits (U.S. Department of Health

and Human Services, 2011). In a study by Guendelman et al. (2009), returning to work less than six weeks and between six to twelve weeks after delivery were associated with four times and two times higher likelihood, respectively, of early breastfeeding cessation. For many mothers who return to work at six weeks postpartum, infants are still waking every two to three hours nightly and nursing for thirty to sixty minutes, and mothers are exhausted (King, 2013).

Lactation consultants can empower women with knowledge about workplace accommodation laws, the utilization of breast pumps, how to properly store breast milk, and how to rely on support networks and work with employers to best balance work, family, and breastfeeding (Bai & Wunderlich, 2013).

Breastfeeding is complex, involving many nonmodifiable and modifiable variables that can impact outcomes, some more so than others and differently for each individual. In-home support is associated with increased satisfaction with postpartum care for mothers, and individualizing the care for mothers, including the frequency, timing, duration, and intensity, may improve outcomes for women (Yonemoto, Dowswell, Nagai, & Mori, 2017). Lactation counselors are in the perfect position to modify the support and education provided to each mother's unique breastfeeding experience through the first critical two weeks and when preparing to return to work, which can lead to higher self-efficacy and longer breastfeeding exclusivity and duration.

Self-Efficacy, Intention, and Breastfeeding Behavior

Research has described multiple risk factors that have been shown to contribute to early breastfeeding cessation. There are many nonmodifiable risk factors for early breastfeeding cessation, including younger maternal age (CDC, 2016b; Dunn, Kalich, Fedrizzi, and Phillips, 2015), non-Hispanic black ethnicity (U.S. Department of Health and Human Services, 2011;

CDC, 2016b), single marital status (CDC, 2016b), lower level of education (Bai, Fong, and Tarrant, 2015; CDC, 2016b; Glassman, McKearney, Saslaw, and Sirota, 2014), and preterm infants (Hackman, Alligood-Percoco, Martin, Zhu, & Kjerulff, 2016; U.S. Department of Health and Human Services, 2011).

However, self-efficacy, or a mother's confidence and belief that she will be able to breastfeed, has been shown as a strong predictor of actual breastfeeding outcome and can be influenced and improved by targeted intervention (Blyth et al., 2004; Henshaw, Fried, Siskind, Newhouse, & Cooper, 2015; Linares, Rayens, Dozier, Wiggins, & Dignan, 2015; Loke and Chan, 2013; McCarter-Spaulding and Dennis, 2010). Higher breastfeeding self-efficacy during the early postpartum period predicts longer breastfeeding duration (Laliberté et al., 2016; Tsai, Huang, & Lee, 2015).

Self-Efficacy Theory

Bandura's (1977) self-efficacy theory, in which an individual's perceived ability to perform a specific task or behavior can lead to the desired outcome through modifying his or her motivation, thought process, emotional state, and social environment, was derived from social cognitive theory. Two components of self-efficacy theory include *outcome expectancy*, or believing a behavior will lead to a particular outcome, and *efficacy expectancy*, in which an individual believes that he or she can successfully execute that behavior to produce the desired outcome (Bandura, 1977). Some individuals may believe the behavior will produce the desired outcome but have little confidence in their own ability to produce the desired outcome through performing the behavior (Bandura, 1977). Individuals diversely perceive circumstances positively or negatively, and they encounter different types and amounts of efficacy-altering

experiences; thus, self-efficacy is determined by each individual and his or her unique situation (Bandura, 1977).

According to Bandura (1977), the measurement of self-efficacy should be behavior-specific since beliefs in abilities vary according to the behavior. In 1999, Cindy-Lee Dennis applied Bandura's self-efficacy theory to breastfeeding, creating a framework to measure the self-efficacy of breastfeeding mothers. In Dennis's model, outcome expectancy in breastfeeding is the belief that efforts to breastfeed will lead to successful breastfeeding. Efficacy expectancy is when a mother believes she will be able to produce enough milk to satisfy her growing baby and that she will be able to continue breastfeeding for as long as she desires. Dennis's framework for breastfeeding self-efficacy also explains that women's belief in their ability to breastfeed is influenced through four sources of self-efficacy, as shown in Figure 1: (1) performance accomplishments, which are experienced through an individual's direct involvement in a task or behavior, (2) vicarious experiences, which occur by observing individuals similar to oneself succeeding in the task or behavior, (3) verbal persuasion, which includes feedback and encouragement to perform the task or behavior, and (4) physiological and affective states, such as exhaustion, stress, depression, and anxiety (Dennis, 1999).

Application of Bandura's Theory of Self Efficacy, and Dennis's adaptation of the theory to breastfeeding mothers, helps to illustrate the direct and indirect influence that lactation support can have on mothers who are struggling to initiate or continue breastfeeding. The framework can be used to identify breastfeeding mothers who may be at a higher risk for early breastfeeding cessation, to assess breastfeeding perceptions, behaviors and challenges in mothers in order to individualize self-efficacy-building strategies, to evaluate the effectiveness of each intervention in real time and then modify and adapt intervention strategies for continuous improvement

(Dennis, 2003). Lactation counselors are in an ideal position to tailor the support and education provided to each mother, targeting individualized interventions that can have a direct impact on one or more sources of her self-efficacy, each of which may promote and protect the maintenance and continuation of her breastfeeding.

Performance Accomplishments

Lactation counselors support performance accomplishments through encouraging mothers to build on past successful breastfeeding experiences and attempts at breastfeeding to gain confidence to continue breastfeeding and reach breastfeeding goals. Lactation counselors can positively reinforce successful performances with strategies for how to improve future breastfeeding attempts (Blyth et al., 2002). A lactation consultation may include taking a maternal, infant, and feeding history, as well as performing a maternal and infant exam, observing a feeding to assess milk production and latch, and providing education and a plan for future feedings and anticipatory guidance (Gutowski, Walker, & Chetwynd, 2014). Ongoing breastfeeding support is needed to address perceived breastfeeding challenges, both physical and emotional, to help mothers reach their breastfeeding goals (Gutowski, Walker, & Chetwynd, 2014).

One of the main barriers to breastfeeding is the perception of inadequate milk supply (Blyth et al., 2002; Creedy et al., 2003; Teich, Barnett, & Bonuck, 2014; Wood, Woods, Blackburn, and Sanders, 2016). Maternal breastfeeding self-efficacy impacts perceived insufficient milk supply (Galipeau, Dumas, and Lepage, 2017). Helping establish a successful latch within the first 2 weeks postpartum is another challenge in which acute support is needed (Pounds, Fisher, Barnes-Josiah, Coleman, & Lefebvre, 2017). The lactation counselor can be that support and guide mothers through these breastfeeding challenges. Other breastfeeding

challenges include women breastfeeding multiple infants at once, which is associated with lower breastfeeding rates (Whitford, Wallis, Dowsell, West, & Renfrew, 2017). Baby delivery method can influence breastfeeding rates, as cesarean sections are associated with early breastfeeding cessation (Cato, Sylvén, Lindbäck, Skalkidou & Rubertsson, 2017; Hobbs, Mannion, McDonald, Brockway, and Tough, 2016). Early breastfeeding difficulties were found to significantly predict decreased exclusive breastfeeding, intention, and duration, and women who exclusively breastfed for six months reported less perceived breastfeeding difficulties in a study by de Jager, Broadbent, Fuller-Tyszkiewicz, & Skouteris (2014).

Newborns nurse frequently in the first few days, often 8-12 or more times in a 24 hour period (La Leche League, 2017). Each of these breastfeeding opportunities in the first few days presents as either a positive or negative experience from which a mother will build her self-efficacy, potentially changing the course of her breastfeeding efforts and likelihood of success. Each positive experience, such as learning from the lactation counselor what a successful latch feels like, provides the foundation upon which future experiences will be built, compared to struggles and self-doubt, such as being unsure if her infant is properly latched, with low self-efficacy. Healthcare professionals, including lactation counselors, can support initial breastfeeding attempts to ensure that negatively perceived performance does not take away from breastfeeding self-efficacy growth (Blyth et al., 2002). Addressing unrealistic expectations in the early postpartum period through education and support of perceived challenges can prevent decreases in breastfeeding duration and self-efficacy (Wilhelm, Rodehorst, Stepan, Hertzog, & Berens, 2008).

Vicarious Experiences

Vicarious experience includes mothers watching other mothers breastfeed (Dennis, 2010). Mothers often seek help from those who have had the same experiences, as well as their partners, friends, and family members who are easily accessible (Pounds, Fisher, Barnes-Josiah, Coleman, & Lefebvre, 2017). Expectant mothers who had watched other mothers breastfeed their infants had higher breastfeeding self-efficacy, and lactation counselors can assess mothers' social support and previous experience of watching other mothers breastfeed (Zhu, Chan, Zhou, Ye, & He, 2014). To address vicarious experiences, lactation counselors can advise mothers to reflect on prenatal education, utilize mentors such as family members or friends who have successfully breastfed, or seek peer support through breastfeeding peer support groups.

Many CLCs teach breastfeeding classes (Healthy Children Project Inc., 2017) and are involved in counseling prenatally (Academy of Lactation Policy and Practice, Inc., n.d.b). Prenatal education is associated with higher rates of breastfeeding (Artieta-Pinedo, Paz-Pascual, Grandes, Bacigalipe, Payo, & Montoya, 2013; Brown, Geller, & Kazbour, 2014; Chen, Johnson, & Rosenthal, 2012; McDonald, Pullenayegum, Chapman, Vera, Giglia, Fusch, & Foster, 2012). Attendance of prenatal breastfeeding classes predict breastfeeding self-efficacy in the immediate postpartum period, as enrollment in such a class provides both technical information and additional opportunity for peer support and vicarious experience postpartum (Yang, Gao, Ip, & Chan, 2016). Lactation counselors can indirectly influence verbal persuasion through guiding mothers to positive social and professional supports, such as community, web-based, or telephone support groups.

Verbal Persuasion

Verbal persuasion includes encouragement from influential friends, family, and lactation support (Dennis, 2010). To influence verbal persuasion, lactation counselors can directly provide

positive evaluations and encouragement to mothers through education and support in mothers' homes or by being available for questions and reassurance through phone calls or text. A lactation consultation should include a review of the mother's goals, expectations, and support systems (Gutowski, Walker, & Chetwynd, 2014). Higher breastfeeding self-efficacy is associated with partner support (Hinic, 2016; Mannion, Hobbs, McDonald, & Tough, 2013) and social support (Faridvand, Mirghafourvand, Malakouti, & Mohammad-Alizadeh-Charandabi, 2017; Mannion, Hobbs, McDonald, & Tough, 2013; Zhu, Chan, Zhou, & He, 2014). Expectant mothers had positive perceived social support or attitude of significant others, including husband, mothers, and friends, towards breastfeeding were found to be associated with higher breastfeeding self-efficacy (Zhu, Chan, Zhou, Ye, & He, 2014). Negative attitudes about breastfeeding from family and friends, especially the father and grandmother of the baby, can create a barrier to breastfeeding (U.S. Department of Health and Human Services, 2011). Women lacking support persons may need greater access to professional help, such as lactation counselors, to avoid breastfeeding challenges and to offset the threats to self-efficacy caused by the negative influence of partners and family (Evans, Dick, Lewallen, & Jeffrey, 2004).

Physiological and Affective States

The first two weeks postpartum often finds women exhausted and hormonally labile, all the while breastfeeding every two to three hours, with potential difficulties that could arise and lead to abrupt cessation (Gutowski, Walker, & Chetwynd, 2014). Women who are stressed, anxious, in pain, tired, and overwhelmed may cease breastfeeding early without the guidance and support from a lactation counselor. Lactation counselors can encourage, reassure, and discuss the mother's questions and problems (US Preventive Services Task Force, 2016). The lactation consultation includes an assessment of maternal emotional health and the provision of

anticipatory guidance for future breastfeeding problems not addressed and supported in the visit (Gutowski, Walker, & Chetwynd, 2014).

Breastfeeding difficulties are associated with an increased risk of developing postpartum depression (The American College of Obstetricians and Gynecologists (ACOG), 2016) and stress (Henshaw, Fried, Siskind, Newhouse, & Cooper, 2015), and higher breastfeeding self-efficacy is associated with a decrease in depressive symptoms (Haga, Ulleberg, Slinning, Kraft, Steen, & Staff, 2012). Similarly, both breastfeeding and non-breastfeeding mothers may face judgement through interactions with healthcare professionals and the community, leading to feelings of fear, inadequacy, failure, and isolation (Thomason, Ebisch-Burton, & Flacking, 2015). Mothers who fail to adhere to exclusive breastfeeding guidelines may be at risk for negative emotions like guilt and dissatisfaction (Komninou, Fallon, Halford, & Harrold, 2016). Lactation counselors can assess whether mothers experience anxiety, frustration, discomfort, or a sense of failure, and these feelings can be acknowledged, normalized, and controlled through strategies taught by the lactation counselor (Blythe et al., 2002). Lactation counselors also function as monitors for the physiological and affective states of mothers and can facilitate access to additional support by evaluating stress, anxiety, or pain and seek help from a healthcare professional if needed.

Motivation and Intention

In addition to breastfeeding self-efficacy, another modifiable risk factor is breastfeeding intention, which is positively associated with breastfeeding self-efficacy (Hinic, 2016; Joshi, Amadi, Meza, Aguirre, and Willhelm, 2015), duration (Blyth et al., 2004; Meedya, Fahy, & Kable, 2010), and exclusivity (de Jager, Broadbent, Fuller-Tyszkiewicz, & Skouteris, 2014). Motivation is another modifiable risk factor that can affect exclusive breastfeeding, in which motivation to maintain exclusive breastfeeding leads to longer exclusive breastfeeding (de Jager

et al., 2015). Motivation may wax and wane depending on the challenges that women encounter in the daily commitment of their bodies to breastfeed. Interventions that target women's sustained motivation can contribute to their persistence and resilience to continued breastfeeding in spite of physical discomfort and emotional stress and fatigue.

Project Design

This scholarly project utilized a descriptive, cross-sectional design with convenience sampling and a one-time, voluntary, electronic survey to capture the impact of in-home lactation support on breastfeeding duration, exclusivity, and self-efficacy. The survey contained 56 total questions designed to capture the effect the literature demonstrated of the impact of in-home lactation support on breastfeeding self-efficacy, duration, and exclusivity among postpartum women. The project was verified as exempt by the Belmont University Institutional Review Board on July 10, 2017.

Clinical Setting

The scholarly project recruitment occurred from the emails of clients of Bosom Buddy, a Middle Tennessee community-based company that provides support to women during pregnancy, birth, and the postpartum period (Bosom Buddy, 2015a). Bosom Buddy was founded in September 2014 (L. Severns, personal communication, February, 12, 2017), offering certified lactation counselors, doulas, and prenatal lactation educators (Bosom Buddy, 2015a). Currently, four doulas, who are certified lactation counselors, work with Bosom Buddy, providing support according to the client's needs through text, phone, email, or in-person at the hospital or in home before, during, and after birth (L. Severns, personal communication, February, 12, 2017). Bosom Buddy receives clients via word of mouth, internet searches, and social media (L. Severns, communication, February, 12, 2017). The CLCs of Bosom Buddy see approximately four

lactation support clients in their homes each week, making themselves available within 24 hours of being contacted and spending one to two hours during each in-home visit (L. Severns, communication, February, 12, 2017). The lactation counselors follow up with clients 24 hours after the initial visit and after as needed by the client (L. Severns, personal communication, February, 12, 2017). The initial in-home visit is \$110, extra visits are \$80 each, and unlimited texts and phone calls are included as part of the initial consultation (L. Severns, personal communication, February, 12, 2017).

Project Population

A convenience sampling method was used to recruit current and past clients, over age 17, who were seen in home by one of the Bosom Buddy lactation counselors between November 1, 2015 and August 1, 2017.

Sources of Data/ Data Collection Instruments

Breastfeeding Self-Efficacy Scale- Short Form

The Breastfeeding Self-Efficacy Scale- Short Form (BSES-SF) (Dennis, 2003), is a valid and reliable tool that measures breastfeeding self-efficacy. In the initial psychometric assessment of the BSES-SF, internal consistency reliability was confirmed with a Cronbach's α of .94, and a positive relationship between breastfeeding self-efficacy at one week postpartum and infant feeding patterns at four and eight weeks postpartum determined predictive validity (Dennis, 2003).

The Breastfeeding Self-Efficacy Scale (BSES) (Dennis & Faux, 1999) was originally a 33-item self-report instrument, but it was reduced to the BSES-SF (Dennis, 2003), a shorter, 14-item, 5-point Likert-type scale in which 1 = not at all confident and 5 = always confident. Summed scores are used to measure self-efficacy and range from 14 to 70, with higher scores

indicating higher breastfeeding self-efficacy levels (Dennis, 2003). The BSES-SF was administered as a retrospective pretest-posttest before and after the visit with the lactation counselor. Retrospective pretest-posttests have been shown to be useful for documenting self-assessed changes that occur as a result of an intervention because these types of interventions are administered once and are more sensitive to respondent change than traditional pretest-posttest evaluations (Nielsen, 2011).

Survey questions developed from a review of the literature.

The remaining 42 questions in the survey were developed from evidence in the literature regarding factors that impact breastfeeding duration, exclusivity, and self-efficacy. These factors reflected in the questions fit into the four constructs of self-efficacy theory (see Figure 2). The impact of the lactation counselor fits within each construct, including enactive mastery. Breastfeeding preparation, breastfeeding observed, and other breastfeeding support methods besides the lactation counselor fits into the vicarious experience construct. Other breastfeeding support methods and social support fit within the verbal persuasion construct. Motivation, delivery type, breastfeeding challenges, when the mother returned to work, and intention can all impact and fit into the construct, physiological and affective states. Intention was measured as how long the mother intended on breastfeeding after the visit with the in-home lactation counselor, with intervals from less than one month to one year or more. In addition to the factors associated with breastfeeding duration, exclusivity, and self-efficacy, demographic variables, including age, race or ethnicity, marital status, and education level were collected.

The complete survey is listed in Appendix A, but two questions are worthy of note. Lactation support experience for both in the hospital and in-home were captured in the survey in two separate questions with the same 8-item, 5-point Likert-type scales in which 1 = strongly

agree and 5 = strongly disagree, and each item was combined for a total experience score. The lactation support experience included receiving helpful advice or information, feeling understood by the lactation counselor, feeling cared for by the lactation counselor, being given the opportunity to discuss concerns, being assisted in an easier transition in returning to work while breastfeeding, being helped with pressure felt to breastfeed, leaving the visit feeling confident to breastfeed one's baby, and overall satisfaction with the experience.

There were some questions that allowed for text entry to capture free text responses for mothers who selected "other options not listed." Forced response was used for all of the questions except the final two text entry questions in order to prevent missing data. After selection of the survey questions, the survey was read by fifteen individuals, including nurses, doulas, nurse practitioners, faculty readers, and breastfeeding mothers, who gave feedback on content and clarity of questions. The project leader also led a pilot study meeting in September 2017 with the two co-owners of Bosom Buddy and the project advisor to strengthen the content validity of the survey created from the literature.

Data Collection Process/ Procedures

An initial email was sent in early October 2017. One follow-up reminder email was sent one-week after the initial email to increase response rates, and the survey closed October 31, 2017. The co-owners sent the emails with the survey link to protect client privacy and increase the response rate. Data was contained within the encrypted and password-protected Qualtrics software program account on the project leader's computer. The data was downloaded into Excel and then exported into SPSS to be analyzed. Data cleaning occurred in November and December, 2017. All responses were both anonymous and confidential, and results of the survey were shared with the co-owners in aggregate form only.

Participants were given the option to write their name at the end of the survey for a chance to win a gift card that supports their self-care. Participant names were kept separate from survey responses. The names of the winners were given to the co-owners of Bosom Buddy, who then contacted the winners to give them the gift cards. One winner was selected before the reminder email was sent out, and three additional winners were selected at the closing of the survey.

Data Analysis

The statistical analysis was performed using the program IBM SPSS Statistics, version 24, with an alpha level of 0.05. An independent t-test was used to compare the self-efficacy scores of those who observed someone breastfeed and those who had not. Power was assessed a priori using G*Power to determine a sample size of 128 was required to detect a medium effect size 0.50, $\alpha = 0.05$, power = 0.80 with the independent t test (Erdfelder, Faul, & Buchner, 1996). Paired t-tests were used to compare breastfeeding self-efficacy before and after the lactation visit, breastfeeding intention before and after the lactation visit, and the mean lactation support experience score of the hospital lactation consultant with the mean lactation support experience score of the in-home lactation counselor. Power was assessed a priori using G*Power to determine a sample size of 34 was required to detect a medium effect size 0.50, $\alpha = 0.05$, power = 0.80 with the paired t test. Post hoc power analysis $\alpha = 0.05$, $n(28,29)$, determined this test to have a power = 0.46 to detect an effect size of 0.5 (Erdfelder, Faul, & Buchner, 1996). A linear regression model was used to assess the impact of self-efficacy, lactation support timing postpartum, and return to work on breastfeeding duration and exclusivity. Descriptive statistics were also used for the remaining data. Analysis of the data occurred from January through May, 2018.

Results

Sample Characteristics

A total of 57 women participated in the study, with a mean age of 33.4 years (SD = 3.426) and age range of 25 to 42. Ninety-five percent of the participants were Caucasian, 93% were married, 53% had a Master's degree or higher, and 79% delivered vaginally (n = 57). Table 1 summarizes demographic variables and breastfeeding experience. At the time of the survey, 21 participants were more than one year postpartum, 22 women were between six months and one year postpartum, 11 women were between three and six months postpartum, and three women were less than three months postpartum.

Challenges and support.

Of the 57 participants, 58% reported problems with latch, 44% reported problems with sore or cracked nipples, mastitis, infant thrush, breast pain, or inverted nipples, and 40% reported stress or fatigue associated with breastfeeding (see Table 1). Because women were invited to select all that apply, percentages exceed 100. Of the 57 participants, 97% felt supported by their partners, 70% felt supported by their mothers, and 82% felt supported by their friends. Seventy-two percent of the participants received in-home lactation support within two weeks of delivery. Fifty-three percent of the participants returned to work or planned to return between three and six months after delivery. One hundred percent called and received in-home lactation support from a certified lactation counselor postpartum, sixty-five percent were seen within one day of calling the lactation counselor, and sixty percent of women in this sample reported only one visit with the in-home lactation counselor.

Breastfeeding Self-Efficacy

A paired-samples t-test (see Table 3) indicated that self-efficacy scores were significantly higher after the visit with in-home lactation support ($M = 53.00$, $SD = 8.26$) than for before the visit with in-home lactation support ($M = 41.25$, $SD = 11.93$), $t(56) = 9.007$, $p \leq 0.001$, $d = 0.81$, supporting our assertion that the in-home lactation counselor improves self-efficacy.

Vicarious experience.

An independent-samples t-test (see Table 2) indicated that self-efficacy scores were not significantly different between those who had observed someone, such as a mother, sister, or friend, breastfeed ($M = 53.75$, $SD = 9.16$) and those who had not observed someone breastfeed ($M = 52.28$, $SD = 7.39$), $t(55) = 0.67$, $p = 0.606$, $d = 0.18$.

Breastfeeding Duration and Exclusivity

Seventy-four percent of women were still nursing at the time of the survey, and 28% were still nursing exclusively at the time of the survey. Thirty-three percent of the 21 women who were more than one year postpartum breastfed for a year or longer, and 40% of the 43 women who were more than six months postpartum breastfed exclusively for six months or longer.

A linear regression model (see Table 4) was constructed to assess the impact of self-efficacy, lactation support timing postpartum, and return to work on breastfeeding duration. A stepwise independent variable entry was used to obtain the best model fit. Results indicate a significant relationship ($F(1,42) = 6.509$, $p=0.014$, with an R squared of 0.134. Self-efficacy is a significant predictor of breastfeeding duration ($\beta=0.366$, $p=0.014$), supporting our assertion. Timing of lactation visit postpartum ($t=1.124$; $p=0.268$) and return to work ($t=-0.297$; $p=0.768$) were not significant predictors of breastfeeding duration. All VIF statistics were 2 or below.

An additional linear regression model (see Table 5) was constructed to assess the impact of self-efficacy, lactation support timing postpartum, and return to work on breastfeeding exclusivity. A stepwise independent variable entry was used to obtain the best model fit. Results indicate a significant relationship ($F(1,40) = 13.246$, $p=0.001$, with an R squared of 0.249. Self-efficacy is also a significant predictor of breastfeeding exclusivity ($\beta=0.499$, $p=0.001$), supporting our assertion. Timing of lactation visit postpartum ($t=-0.844$; $p=0.404$) and return to work ($t=0.062$; $p=0.951$) were not significant predictors of breastfeeding exclusivity. All VIF statistics were 2 or below.

Lactation Support

Ninety-six percent of mothers were motivated prenatally to breastfeed. Eighty-nine percent of the women received lactation support in the hospital, and of those, 63% left the hospital feeling confident they could breastfeed their baby at home. The paired-samples t-test (see Table 3) also indicated that the women rated their in-home lactation support experience significantly higher ($M = 36.25$, $SD = 3.80$) than their hospital lactation support experience ($M = 27.10$, $SD = 7.94$), $t(50) = 7.94$, $p \leq 0.001$, $d = 1.04$.

Intention.

Additionally, the paired-samples t-test (see Table 3) showed that intention scores significantly increased were significantly higher after the visit with in-home lactation support ($M = 5.39$, $SD = 0.92$) than before the visit ($M = 4.93$, $SD = 0.70$), $t(56) = 3.22$, $p = .002$, $d = 0.40$.

Discussion

Breastfeeding mothers need support. If we are to realize the maternal and child health benefits reflected in the Healthy People 2020 breastfeeding goals, we must commit to improving our support of women in the well documented struggle to establish and sustain breastfeeding.

This study demonstrates the positive impact of in-home lactation support on higher breastfeeding self-efficacy and longer duration, and exclusivity. In-home lactation support extends far beyond the transmission of the technical skills of breastfeeding and includes emotional support, advocacy, solidarity, encouragement, role-modeling, and repeated supported opportunity to experience sustained success in breastfeeding.

Lactation Support

Timing.

Most of the participants in the study both sought and received in-home lactation support within the first two weeks of delivery, which reflects how known challenges that occur and worsen during this time make it a prime time for intervention with lactation support and education (Loke & Chan, 2013; Tsai, Huang, & Lee, 2015). Timing of lactation visit postpartum and return to work were not significant predictors of breastfeeding duration or exclusivity. This is different from the current literature, which has found that returning to work or school is a barrier to exclusive breastfeeding (Bai, Fong, and Tarrant, 2015; Tsai, Huang, & Lee, 2015).

Satisfaction.

The data also show that the lactation support experience score was significantly higher for the in-home lactation counselor than for the hospital lactation consultant. This finding is not to promote one method of lactation support over the other, because both are necessary; however, lactation support within the hospital may impact rates of breastfeeding initiation, but is not sufficient to impact duration and exclusivity. Dennis's breastfeeding self-efficacy framework (2010) illustrates how hospital-based support may influence self-efficacy that is sufficient to help women choose and start breastfeeding, whereas home-based support intervenes when women are struggling to continue to do something as difficult as breastfeeding (See Figure 1). Both modes

of support intervene on low self-efficacy to improve confidence, but the outcome of improved confidence in one case is starting something never having been done before, and in another case, is continuing something that is difficult. The timing of the intervention with the in-home lactation counselor that addresses multiple sources of information simultaneously had a positive impact on mother self-efficacy that was sufficient to influence individual response and activity.

Lactation counselors in the hospital have a demanding schedule and see many breastfeeding mothers in one day (Staricka, 2012). The in-home lactation service is user-driven, and the timing more often aligns with the demand of the mother's schedule than while in the hospital. This allows for the probability of being seen when struggling and to receive appropriate help to be higher. Hospital lactation support is good but not enough to sustain targeted breastfeeding duration and exclusivity goals. Women need more help when they get home from the hospital. The only way to standardize quality of services is to require certification, but this study suggests that none of the lactation counselors were IBCLCs, and their outcomes were outstanding.

Intention.

The significant improvement in breastfeeding intention illustrates how timely intervention by in-home lactation counselor influences a struggling mother's effort and persistence, which improves her overall breastfeeding self-efficacy (Hinich, 2016; Joshi, Amadi, Meza, Aguirre, and Willhelm, 2015), duration (Blyth et al., 2004; Meedya, Fahy, & Kable, 2010), and exclusivity (de Jager, Broadbent, Fuller-Tyszkiewicz, & Skouteris, 2014).

Breastfeeding Self-Efficacy

This study illuminates the pathways by which in-home lactation support shifts women's breastfeeding self-efficacy to improve breastfeeding experience and outcomes. The results

provide additional support for the breastfeeding self-efficacy framework by demonstrating that an in-home lactation counselor can enhance mother's breastfeeding self-efficacy through directly influencing each of the sources of self-efficacy information (Dennis, 2010).

Vicarious Experience.

This study did not find that self-efficacy scores were significantly higher for those who have observed someone breastfeed, compared to those who have not, which is different from findings in other studies (Zhu, Chan, Zhou, Ye, & He, 2014). This finding suggests that while vicarious experience has been shown to influence self-efficacy, influencing a single source of information cannot improve self-efficacy enough to impact breastfeeding behaviors.

Verbal persuasion.

Most of the participants in the study felt supported by their partners, mothers, and friends, which likely also led to increased breastfeeding self-efficacy, as indicated in the literature (Hinich, 2016; Faridvand, Mirghafourvand, Malakouti, & Mohammad-Alizadeh-Charandabi, 2017; Mannion, Hobbs, McDonald, & Tough, 2013; Zhu, Chan, Zhou, & He, 2014). Active supportive measures, like acts of service combined with encouraging words, impact maternal breastfeeding confidence, and lactation counselors can help support persons recognize the effect of these supportive measures on mothers' breastfeeding confidence (Mannion, Hobbs, McDonald, & Tough, 2013).

Breastfeeding Duration and Exclusivity

The women in this sample met and exceeded the Healthy People 2020 goal for breastfeeding exclusively for six months. The investment in the in-home lactation support yielded impressive duration and exclusivity rates that exceed current national rates. See Figure 3 for comparison of duration and exclusivity rates of the sample compared to national rates.

This study shows the significant improvement in women's self-efficacy after receiving lactation support and supports the current literature that higher breastfeeding self-efficacy leads to longer breastfeeding duration (Laliberté et al., 2016; Tsai, Huang, & Lee, 2015) and exclusivity (Henshaw, Fried, Siskind, Newhouse, & Cooper, 2015; Loke & Chan, 2013).

Sixty percent of women in this sample reported only one visit with the in-home lactation counselor. With the majority of the women receiving only one in-home visit, 33% of the sample went on to breastfeed for one year or longer, and 40% breastfed exclusively for six months or longer. These numbers represent an impressive increase towards our Healthy People 2020 goals of 34.1% breastfeeding for one year or longer and 25.5% breastfeeding exclusively through six months, compared to current national rates of 30.7% breastfeeding for one year or longer and 22.3% breastfeeding exclusively through six months (CDC, 2016a).

Although cost of the service is often cited as a barrier (Gutowski, Walker, & Chetwynd, 2014), 60% of the sample only required 1 visit with the lactation counselor, costing \$110. The cost-savings of breastfeeding for one year is estimated to be as high as over \$1,000 for formula alone (National Institutes of Health, 2018). Investing in in-home lactation up front can yield long-term health and economic savings. Gutowski, Walker, & Chetwynd (2014) determined that if every mother in the US received five lactation support visits, as recommended by the National Business Group on Health, the total savings for improved child health would be \$5369 per breastfed child, as well as \$9715 per woman for improved maternal health. However, most mothers only use one to three lactation support visits, so the savings would be much higher (Gutowski, Walker, & Chetwynd, 2014). Breastfeeding saves money over time (Bartick & Reinhold, 2010).

Limitations

While the outcomes of the study are significant, the population sample was homogenous, making the study findings non-generalizable to other populations. The women in the sample were highly-educated, older, Caucasian mothers seeking counseling from a private in-home lactation support service, an out-of-pocket expense that is not routinely covered by insurance, and yet, the outcomes found are ones that are desired to be seen in all breastfeeding mothers. Additionally, the study utilized self-report surveys, which could contribute to response bias based on a good or bad experience with the lactation counselor. The retrospective pretest-posttest allowed capture of the self-efficacy data from a cohort of women who are very difficult to follow longitudinally. Although the author acknowledges the potential for recall bias in the retrospective pretest-posttest design, this was a calculated choice based on high risk of attrition in this sample of women.

Implication for Practice

The health benefits of breastfeeding are well known, and high rates of breastfeeding initiation by US women suggest that women intend to and attempt to breastfeed. Breastfeeding brings health benefits, but women struggle to maintain breastfeeding goals. Breastfeeding duration and exclusivity are positively impacted by the use of in-home lactation counselors. Knowing that resources, including online, telephone, peer, in-home, and clinic support, are available prenatally and postpartum depending on financial ability is imperative for mothers to reach their breastfeeding goals. Mothers need to be made aware that making an informed investment in lactation support is an investment in breastfeeding duration and exclusivity. Not all families will be able to afford in-home lactation support, but some support is better than no support. When accessing resources that cost money is a barrier, free services such as La Leche League, the Breastfeeding Hotline, and free clinics are available.

The US Preventive Service Taskforce recommends providing interventions before and after birth to support breastfeeding, making coverage mandatory for private insurers; however, lactation support by IBCLCs is not consistently reimbursed by public or private third party payers, and Medicaid only reimburses licensed providers (Gutowski, Walker, & Chetwynd, 2014). With lactation support being shown to be cost-effective, insurers should recognize and quantify services provided by the IBCLC, provide state licensure for and credential IBCLCs, and reimburse breastfeeding support (Gutowski, Walker, & Chetwynd, 2014). Reimbursing lactation support can reduce health disparities caused by lack of access to breastfeeding support.

Implications for Research

The Healthy People 2020 goals (U.S. Department of Health and Human Services, 2017) speak to a population goal for all women. While there is strong evidence to support the cost-effectiveness of breastfeeding, many still cite cost as a barrier to quality and timely lactation support. The failure or reluctance of third-party payers to reimburse for lactation support may be contributing directly to disparities in rates of breastfeeding by low income and minority women, who go on to bear the health and cost burdens associated with not breastfeeding (Gutowski, Walker, & Chetwynd, 2014). The women who currently access in-home lactation support are often in a higher socioeconomic class. There is a lack of generalizability in access to in-home support, particularly to poor women of color who struggle the most with breastfeeding and demonstrate need for support (Gutowski, Walker, & Chetwynd, 2014). The next step is to improve access for any woman who needs it. All women need support, but finding ways to make support available is a public health commitment which warrants a system level response, shifting the burden of meeting national public health goals from women who are struggling to a health care system that is sensitive and responsive to their needs.

Conclusion

High national rates of breastfeeding initiation pair with consistently low rates of exclusivity and duration highlight the opportunity for intervention to support women to meet their breastfeeding goals and to promote the known maternal and child health benefits of breastfeeding. The clear impact that in-home lactation support has on each of the sources of a woman's developing self-efficacy make it uniquely effective to influence breastfeeding outcomes. This study shows the value of in-home lactation support on breastfeeding intention and self-efficacy during and after the transition from the hospital to home. Self-efficacy was found to be a significant predictor of breastfeeding duration and exclusivity; thus, the higher a woman's breastfeeding self-efficacy, the longer she will breastfeed any and exclusively. Investing in in-home lactation support during the early postpartum period can lead to long-term health benefits and financial savings. Mothers need to be made aware of breastfeeding support resources options, and access to these services for all women need to be improved. Increasing access to lactation support services to all women is a political and economic systems investment to improve maternal and child health.

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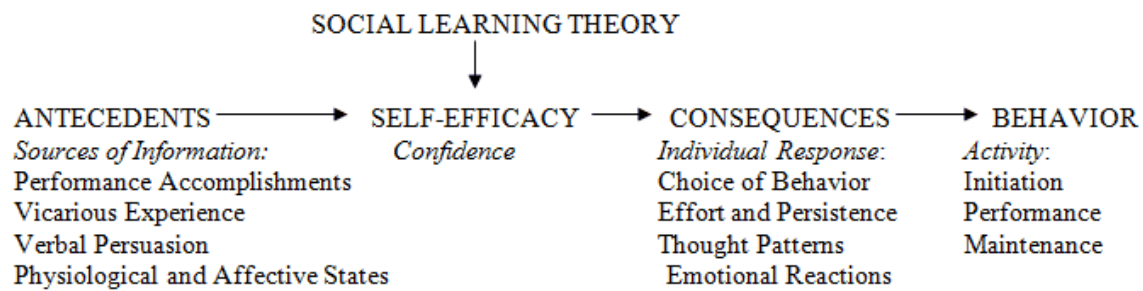
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Figure 1

(Dennis, 2010)

Figure 2

Breastfeeding Self-Efficacy	
Enactive Mastery - Lactation Support	Verbal Persuasion - Lactation Support - Other Breastfeeding Support Methods - Social Support
Vicarious Experience - Lactation Support - Breastfeeding Preparation - Breastfeeding Observed - Other Breastfeeding Support Methods	Physiological and Affective States - Lactation Support - Delivery Type - Motivation - Intention - Breastfeeding Challenges - Return to Work

Figure 3

Appendix A

Lactation Support Impact on Breastfeeding Duration and Self-Efficacy

Thank you for your support of this project! Completing this survey should take approximately 10 minutes. Please answer all questions to the best of your knowledge. Your responses will help us improve in-home lactation support for you and other women. By submitting a completed survey, you will be entered to win a special gift that promotes your self-care! Please note that survey responses are confidential, and the entry of your name at the end of the survey for the chance to win a gift card is separated from your survey responses. Thank you for helping us!

Prenatal Preparation

1. Before your baby was born, how motivated were you to try breastfeeding?

- ☐ Very motivated
 - ☐ Somewhat motivated
 - ☐ Neither motivated nor unmotivated
 - ☐ Somewhat unmotivated
 - ☐ Not at all motivated
-

2. During your pregnancy, where did you receive the **MOST HELPFUL** breastfeeding preparation or education? (Please select only one).

- ☐ Family/ Friend
- ☐ Reading (books/ online resources)
- ☐ Newborn Class
- ☐ Breastfeeding Class
- ☐ Mother to mother peer support (La Leche League)
- ☐ OB/ Midwife
- ☐ Pediatrician
- ☐ Doula
- ☐ WIC
- ☐ I did not receive breastfeeding preparation or education
- ☐ Other _____

3. Do you or did you have someone, such as a mother, sister, or friend, whom you observed breastfeeding?

- ☐ Yes
- ☐ No

Page Break

Birth Experience: please answer the following questions about your most recent birth.

4. What is your baby's date of birth? (mm/dd/yyyy)

5. What type of delivery did you have?

- ☐ Vaginal - induction
 - ☐ Vaginal - without induction
 - ☐ Cesarean section - scheduled
 - ☐ Cesarean section - non-scheduled
-

6. Were you discharged at the same time as your baby?

- ☐ Yes
- ☐ No
- ☐ N/A; my baby was born at home

Skip To: Q12 If Were you discharged at the same time as your baby? = N/A; my baby was born at home

7. How long did you stay in the hospital before returning home?

[For example: If you stayed in the hospital for 2 days, you would write in the boxes "Days 2, Weeks 0." If you stayed in the hospital for 2 weeks and 4 days, you would write "Days 4, Weeks 2."]

- ☐ Days _____
 - ☐ Weeks _____
-

8. How long did your baby stay in the hospital before returning home?

[For example: If your baby stayed in the hospital for 2 days, you would write in the boxes "Days 2, Weeks 0." If your baby stayed in the hospital for 2 weeks and 4 days, you would write "Days 4, Weeks 2."]

- ☐ Days _____
- ☐ Weeks _____

9. While away from your baby, were you pumping?

- ☐ Yes
- ☐ No
- ☐ I discharged at the same time as my baby

10. Did a hospital lactation consultant visit you in the hospital or birthing center before discharge?

- ☐ Yes
- ☐ No

Skip To: Q12 If Did a hospital lactation consultant visit you in the hospital or birthing center before discharge? = No

11. Tell us more about your experience receiving breastfeeding support provided by the lactation consultant in the hospital or birthing center.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
The advice/information provided by the lactation consultant was helpful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt understood by the lactation consultant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt cared for by the lactation consultant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was given the opportunity to discuss concerns	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The lactation consultant assisted me in an easier transition in returning to work while breastfeeding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The lactation consultant helped me with pressure felt to breastfeed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I left the hospital feeling confident I could breastfeed my baby at home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I was satisfied overall with the experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Page Break

Please answer the following questions as they relate to your breastfeeding experience after discharge from the hospital or birthing center.

12. Who referred you or suggested you call the in-home lactation counselor?

- ☐ Friend/ Family
- ☐ Hospital/ Birthing Center
- ☐ Homebirth midwife
- ☐ Internet/ Social Media search
- ☐ Other doulas
- ☐ Pediatrician
- ☐ Other _____
- ☐ Part of the standard follow-up in the birth/ postpartum package with Bosom Buddy

Skip To: Q14 If Who referred you or suggested you call the in-home lactation counselor? = Part of the standard follow-up in the birth/ postpartum package with Bosom Buddy

13. How soon after your baby was born did you call the in-home lactation counselor?

[For example: If you called in 2 days, you would write in the boxes "Hours 0, Days 2, Weeks 0."
If you called in 2 weeks and 4 days, you would write "Hours 0, Days 4, Weeks 2."]

- ☐ Hours _____
 - ☐ Days _____
 - ☐ Weeks _____
 - ☐ I made an appointment prior to discharge
 - ☐ I was seen in the hospital
-

14. How soon after your baby was born were you seen by the lactation counselor in your home?

[For example: If you were seen in 2 days, you would write in the boxes "Hours 0, Days 2,

Weeks 0." If you were seen in 2 weeks and 4 days, you would write "Hours 0, Days 4, Weeks 2."]

- ☐ Hours _____
- ☐ Days _____
- ☐ Weeks _____

15. How many times have you been assisted by the lactation counselor in your home?

16. How many times have you received advice from the in-home lactation counselor via phone/ text/ email?

17. What other breastfeeding support methods after discharging from the hospital or birthing center have you utilized? (Please select up to three).

- ☐ Another in-home lactation counselor apart from Bosom Buddy
- ☐ Family/ Friends
- ☐ Peer Support Group (La Leche League, circles, clinics)
- ☐ Breastfeeding Outpatient Clinic
- ☐ Breastfeeding Hotline
- ☐ Internet
- ☐ WIC
- ☐ Pediatrician
- ☐ OB/Midwife
- ☐ I have not attempted other breastfeeding support methods
- ☐ Other _____

18. Please answer the following questions related to your current or most recent breastfeeding experience.

19. Which breastfeeding challenges have been or were the most challenging? (Please select up to three).

- ☐ Low milk supply/ baby not satisfied
 - ☐ Oversupply/ engorgement
 - ☐ Problems with latch
 - ☐ Sore/ cracked nipples/ mastitis/ thrush/ breast pain/ inverted nipples
 - ☐ Stress/ fatigue
 - ☐ Breastfeeding multiple infants at once
 - ☐ Lack of support/ education
 - ☐ Lip tie/ tongue tie/ buccal tie
 - ☐ NICU stay > 24 hours
 - ☐ Jaundice
 - ☐ Maternal medical complications
 - ☐ None
 - ☐ Other _____
-

[illegible]

[illegible]

22. Did any of the following people want you to stop breastfeeding?

	Yes	No	N/A
The baby's father	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your mother	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your mother-in-law	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your grandmother	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Another family member	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A doctor or other health professional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your employer or supervisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Have you ever experienced shame related to breastfeeding?

- ☐ Yes
- ☐ No

24. How old will your baby be or was your baby when you return(ed) to work or school?

[For example: If you returned to work in 3 months, you would write in the boxes "Weeks 0, Months 3." If you returned to work in 6 weeks, you would write "Weeks 6, Months 0."]

- ☐ Weeks _____
- ☐ Months _____
- ☐ I am not returning or did not return to work or school

25. **Before** your visit with the in-home lactation counselor, how motivated were you to continue breastfeeding?

- ☐ Very motivated
 - ☐ Somewhat motivated
 - ☐ Neither motivated not unmotivated
 - ☐ Somewhat unmotivated
 - ☐ Not at all motivated
-

26. **After** your visit with the in-home lactation counselor, how motivated were you to continue breastfeeding?

- ☐ Very motivated
 - ☐ Somewhat motivated
 - ☐ Neither motivated nor unmotivated
 - ☐ Somewhat unmotivated
 - ☐ Not at all motivated
-

27. How long did you intend on breastfeeding **originally/ at birth**?

- ☐ Less than one month
 - ☐ 1 month to <3 months
 - ☐ 3 months to <6 months
 - ☐ 6 months to <9 months
 - ☐ 9 months to < 1 year
 - ☐ 1 year or more
-

28. How long did you intend on breastfeeding **after the in-home lactation consultation**?

- ☐ Less than one month
 - ☐ 1 month to <3 months
 - ☐ 3 months to <6 months
 - ☐ 6 months to <9 months
 - ☐ 9 months to < 1 year
 - ☐ 1 year or more
-

29. What feeding methods are you currently using for your baby? (Please select all that apply).

- ☐ Breastfeeding
 - ☐ Pumped breastmilk
 - ☐ Donor breastmilk
 - ☐ Syringe feeding
 - ☐ SNS (Supplemental Nursing System)
 - ☐ Store-bought formula
 - ☐ Homemade formula
 - ☐ Cow's milk
 - ☐ Solid food
 - ☐ Other _____
-

30. What feeding methods have you tried for your baby? (Please select all that apply).

- ☐ Breastfeeding
- ☐ Pumped breastmilk
- ☐ Donor breastmilk
- ☐ Syringe feeding
- ☐ SNS (Supplemental Nursing System)
- ☐ Store-bought formula
- ☐ Homemade formula
- ☐ Cow's milk
- ☐ Solid food
- ☐ Other _____

31. How long did you feed your baby only your breastmilk (no formula, solid food, or donor milk)?

[For example: If you breastfed your baby only your breastmilk for 6 months, you would write in the boxes "Weeks 0, Months 6." If you breastfed your baby only your breastmilk for 3 weeks, you would write in the boxes, "Weeks 3, Months 0."]

- ☐ Weeks _____
- ☐ Months _____
- ☐ I am currently feeding my baby only breastmilk
- ☐ I never fed my baby only breastmilk

Skip To: Q35 If How long did you feed your baby only your breastmilk (no formula, solid food, or donor milk)? [F... = I am currently feeding my baby only breastmilk]

32. How old was your baby when you completely stopped feeding your baby your breastmilk?

[For example: If you completely stopped feeding your baby your breastmilk at 1 year, you would

write in the boxes "Weeks 0, Months 12." If you completely stopped breastfeeding your baby your breastmilk at 3 weeks, you would write in the boxes, "Weeks 3, Months 0."]

- ☐ Weeks _____
- ☐ Months _____
- ☐ I am still breastfeeding my baby

*Skip To: Q35 If How old was your baby when you completely stopped feeding your baby your breastmilk?
[For example... = I am still breastfeeding my baby*

33. Did you breastfeed as long as you wanted to?

- ☐ Yes
- ☐ No

34. How satisfied do you feel about the experience of having breastfed your baby?

- ☐ Very satisfied
- ☐ Somewhat satisfied
- ☐ Neither satisfied nor unsatisfied
- ☐ Somewhat unsatisfied
- ☐ Not at all satisfied

Page Break

For each of the following statements, please choose the answer that best describes how confident you felt with breastfeeding before and after you received help from the lactation counselor [Questions 35-48].

[A copy of the BSES-SF can be obtained from Dr. Cindy-Lee Dennis].

Page Break

49. Please answer the following questions as they relate to your experience with your Bosom Buddy lactation counselor.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
The advice/information provided by the lactation counselor was helpful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt understood by the lactation counselor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt cared for by the lactation counselor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was given the opportunity to discuss concerns	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The lactation counselor assisted me in an easier transition in returning to work while breastfeeding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The lactation counselor helped me with pressure felt to breastfeed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I left feeling confident I could breastfeed my baby at home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I was
satisfied
overall with
the
experience

☐ ☐ ☐ ☐ ☐

50. Do you feel that the cost associated with the in-home lactation counselor service was fair?

☐ Yes

☐ No

51. Would you refer other mothers to the in-home lactation counselor?

☐ Yes

☐ No

Page Break

Demographic Information

52. What is your age?

53 What is your race/ethnicity?

☐ African American

☐ Asian

☐ Caucasian

☐ Hispanic

☐ Other

54. What is your marital status?

☐ Living with partner

☐ Married

☐ Single/ Never Married

☐ Separated/ Divorced

☐ Widowed

55. What is your highest level of education

☐ High school graduate or less

☐ College graduate

☐ Master's degree or higher

Page Break

56. If you wish, please provide any additional feedback about the lactation counselor or your breastfeeding experience. We greatly appreciate your feedback. We also encourage you to reach out to Bosom Buddy again if you are continuing to experience challenges with breastfeeding and need assistance. Thank you so much for your time.

57. Your self-care is important to us! Don't forget to fill in your name below so that you can be entered to win a gift card.

Tables

Table 1: Sample Descriptive Statistics

Demographics	n (%)
Age (n = 57)	M=33.42
25-29	7(12.3)
30-34	30(52.6)
35-39	18(31.6)
40-44	2(3.5)
Race (n = 57)	
Asian	2(3.5)
Caucasian	54(94.7)
Hispanic	1(1.8)
Marital Status (n = 57)	
Living with Partner	1(1.8)
Married	53(93.0)
Single/Never Married	3(5.3)
Education Level (n = 57)	
High school graduate or less	3(5.3)
College graduate	24(42.1)
Master's degree or higher	30(52.6)
Delivery (n = 57)	
Vaginal	45(78.9)
Cesarean section	12(21.1)
Breastfeeding challenges (n = 57)	
Low milk supply/ baby not satisfied	18(31.6*)
Oversupply/ engorgement	18(31.6*)
Problems with latch	33(57.9*)
Sore/ cracked nipples/ mastitis/ thrush/ breast pain/ inverted nipples	25(43.9*)
Stress/ fatigue	23(40.4*)
Lack of support/ education	9(15.8*)
Lip tie/ tongue tie/ buccal tie	1(1.8*)
NICU stay > 24 hours	5(8.8*)
Jaundice	11(19.3*)
Maternal medical complications	1(1.8*)
None	2(3.5*)
Other	1(1.8*)

Partner Support (n = 57)	
Very supported	46(80.7)
Somewhat supported	9(15.8)
N/A	2(3.5)
Mother Support (n = 57)	
Very supported	29(50.9)
Somewhat supported	11(19.3)
Neutral	5(8.8)
Somewhat unsupported	4(7.0)
Not at all supported	2(3.5)
N/A	6(10.5)
Friend Support (n = 57)	
Very supported	34(59.6)
Somewhat supported	13(22.8)
Neutral	6(10.5)
Somewhat unsupported	1(1.8)
Not at all supported	1(1.8)
N/A	2(3.5)
Timing of Lactation Visit Postpartum (n = 57)	
≤ 3 days	13(22.8)
> 3 days to 2 weeks	28(49.1)
> 2 weeks to 1 month	7(12.3)
> 1 month	9(15.8)
Return to Work (n = 57)	
< 12 weeks	7(12.3)
12 to < 16 weeks	14(24.5)
16 to < 24 weeks	16(28.1)
24 or more weeks	7(12.3)
Did not return to work	13(22.8)
Duration (n = 21)	
Breastfed < 1 year	14(66.7)
Breastfed ≥ 1 year	7(33.3)
Exclusivity (n = 43)	
Breastfed < 6 months	26(60.5)
Breastfed ≥ 6 months	17(39.5)

*These percentages do not add up to 100 because participants reported up to 3 breastfeeding challenges.

Table 2: Independent-samples t-test

	Diff		Observed breastfeeding			Did not observe breastfeeding			t	df	p	95% CI
	M	SE	M	SD	n	M	SD	n				
Self-efficacy	1.47	2.20	53.75	9.16	28	52.28	7.39	29	0.67	55	.606	-2.93, 5.88

Table 3: Paired-samples t-test

	Post			Pre			t	df	p	95% CI
	M	SD	n	M	SD	n				
Self-efficacy	53.00	8.26	57	41.25	11.93	57	9.01	56	.000	9.14, 14.37
Intention	5.39	0.92	57	4.93	0.70	57	3.22	56	.002	0.17, 0.74
Quality of service (Post = home LC; Pre = hospital LC)	36.25	3.80	51	27.10	7.94	51	7.94	50	.000	6.84, 11.47

Table 4: Stepwise Regression on Duration

	β	t	p	F	P	95% CI
Constant		-0.425	0.673	6.509	0.014	
Self-Efficacy After LC	0.366	2.55	0.014			-40.68, 26.51

Table 5: Stepwise Regression on Exclusivity

	β	t	p	F	P	95% CI
Constant		-1.860	0.070	13.246	0.001	
Self-Efficacy After LC	0.499	3.640	0.001			-0.293, 1.024