

Use of Telehealth to Increase Breastfeeding Exclusivity and Duration

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Telehealth is a rapidly growing healthcare modality that can be utilized to deliver breastfeeding education and support to increase breastfeeding outcomes including exclusivity and duration. The purpose of this integrative review is to explore and evaluate the strength of the current research evidence supporting the effectiveness of telehealth to deliver breastfeeding education and support. The review was conducted using five electronic databases to search English language articles related to telehealth and breastfeeding from 2009 to 2016. Eleven studies were identified as meeting the inclusion criteria, and included a total of 4,896 participants in five countries. Results from the review suggest that telehealth is a promising modality for breastfeeding education and support and is perceived as an acceptable and beneficial delivery method. More research is needed to determine which specific modalities are most effective and how they are best implemented.

Keywords: breastfeeding; breastfeeding exclusivity; lactation; telehealth

Telehealth is a rapidly growing healthcare modality that can be utilized to deliver breastfeeding education and support to increase breastfeeding outcomes, including exclusivity and duration. The purpose of this integrative review is to explore and evaluate the strength of the current research evidence supporting the effectiveness of telehealth to deliver breastfeeding education and support.

Background

Breast milk provides the optimal and preferred nutrition for infants, and offers both infant and maternal benefits that have been well established (Bomer-Norton, 2014). The American Academy of Pediatrics (AAP, 2012) recommends exclusive breastfeeding for the first 6 months of age and to continue breastfeeding with complementary foods until at least 1 year of age. Other national organizations, including the Centers for Disease Control and Prevention (CDC) and the Office of Disease Prevention and Health Promotion (ODPHP), have also identified the importance of breast milk and breastfeeding. These organizations have incorporated national goals related to breastfeeding into *Healthy People 2020*, a federal program that establishes 10-year science-based objectives aimed at improving the health of Americans (ODPHP, 2016). Furthermore, the importance of breast milk and breastfeeding is recognized on the global level by the World Health Organization (WHO). The WHO, like the AAP, recommends exclusive breastfeeding for the first 6

months of age, and further recommends breastfeeding for at least 2 years of age (WHO, 2016).

Despite the well-known benefits, and national and global recommendations related to breastfeeding, only 22.3% of newborns are exclusively breastfeeding at 6 months in the United States (CDC, 2016). This is below the *Healthy People 2020* target goal of 25.5%. Many strategies to achieve the *Healthy People 2020* goal have been studied, including maternal education related to breastfeeding and a combination of lay and professional support (Meedya, Fahy, & Kable, 2010).

To further identify strategies to reach the *Healthy People 2020* goal, a systematic review and meta-analysis was completed in 2003 for the United States Preventive Services Task Force (USPSTF). This review found that educational programs and support interventions were the single most effective interventions to increase breastfeeding exclusivity and duration up to 6 months, and that policy and research should focus on how to better implement these practices into diverse care settings (Guise et al., 2003). Content in the identified interventions included benefits of breastfeeding, main principles of lactation, common problems, myths related to breastfeeding, and skills training (Guise et al., 2003).

Telehealth

Telehealth is a rapidly growing healthcare delivery method and is described as the use of technology to distribute a variety of services from a distant site

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including health information, education, and healthcare (Health Resources and Services Administration [HRSA], 2016). When applied to breastfeeding education and support, telehealth is a modern modality that can be used to promote the USPSTF recommendations outlining supportive measures to make progress toward the *Healthy People 2020* goal.

In 2016, the HRSA defines telehealth as a combination of non-face-to-face, distant, and remote communication applications. These include digital images, secure emails, pre-recorded medical advice, phone conversations, and videoconference communication, including over a smart phone or tablet (HRSA, 2016). Telehealth also includes a broad variety of health information that may be delivered in many non-face-to-face ways through technology (HRSA, 2016).

Telehealth is a booming industry that has grown exponentially in the last 5 years to include services provided in more than half of all U.S. hospitals (American Telemedicine Association, 2016). Benefits of telehealth are only limited to the technology available and include the possibility of increased contact between a patient and provider, access to expert consult, and expansion of care into rural areas (HRSA, 2016). When applied to intervention strategies to increase national health recommendations, including increased breastfeeding outcomes, telehealth has great potential to increase success toward measurable goals as it can be easily accessed through telecommunication services such as internet, phone, and satellite.

Additionally, breastfeeding education and support through telehealth appear to correspond with the needs of the current childbearing generations including Millennials and Generation Z (ages 18 to 40). It has been found that as many as 96% of current perinatal women have access to a mobile device and internet (Bensley et al., 2014; Gao, Larsson, & Luo, 2013). With the growing technologically competent population, it appears important that preventive support includes delivery through current popular and widely used technological methods.

Integrative Literature Review

This integrative review explores and evaluates strengths and limitations of the current research evidence supporting the effectiveness of telehealth to deliver breastfeeding education and support. This review includes all articles related to breastfeeding women and children and telehealth published from January 2009 to April 2016. Using the terms *breastfeeding telehealth*, *lactation telehealth*, *breastfeeding telemedicine*, and

lactation telemedicine, the Cumulative Index of Nursing and Allied Health Literature (CINAHL), Science Direct, Cochrane Library, PubMed, and Medline electronic databases were searched. Inclusion criteria included primary levels of evidence from January 2009 to April 2016. Exclusion criteria included non-English language and articles before 2009. The initial search resulted in 284 articles. After application of screening and exclusion criteria, 11 articles were included in this review (Figure 1).

Results are grouped in two categories: exclusivity and duration of breastfeeding with telehealth breastfeeding education and support (Table 1), and perception of telehealth breastfeeding education and support (Table 2).

Exclusivity and Duration of Breastfeeding With Telehealth Breastfeeding Education and Support

The results of 6 of the 11 studies include the impact of telehealth on breastfeeding exclusivity and duration. Five of the studies indicate more exclusive breastfeeding and longer duration after receiving support through telehealth (Ahmed et al., 2016; Guijarro et al., 2014; Jiang et al., 2014; Newby et al., 2015; Reeder et al., 2014). One of the six studies in this group identifies no significant differences between the intervention group compared to the control (Seguranayes et al., 2014).

Perception of Telehealth Breastfeeding Education and Support

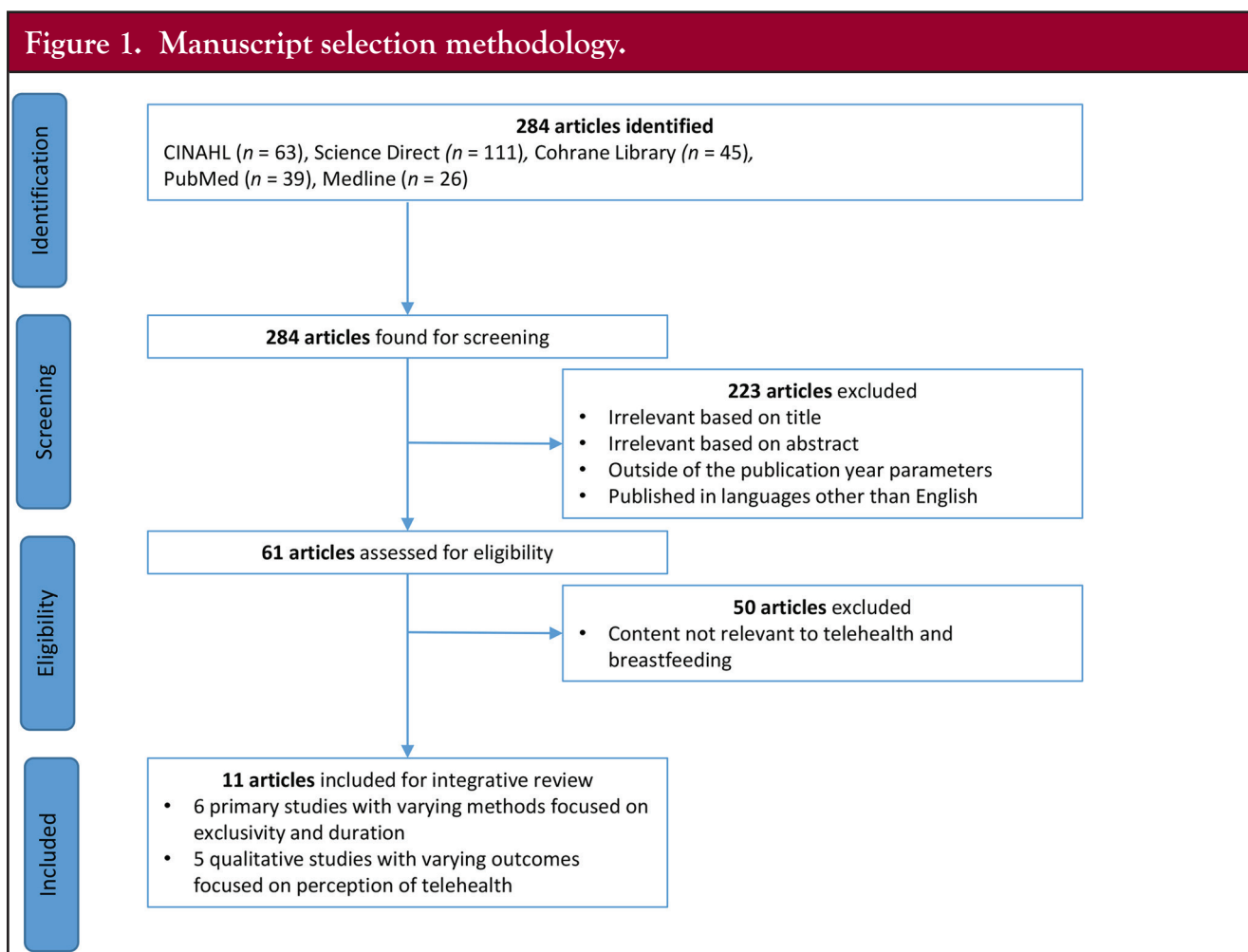
Five of the 11 studies focused on attitudes of receptivity, described as participant perceptions of telehealth breastfeeding education and support. Study participants perceived the telehealth modality as an acceptable and beneficial means to deliver sensitive care and education related to breastfeeding (Ahmed & Ouzzani, 2012; Friesen et al., 2015; Habibi et al., 2012; Roberts et al., 2009; Rojjanasrirat et al., 2012).

Discussion

This review suggests that telehealth breastfeeding education and support can increase exclusivity and duration, and is perceived as an acceptable and beneficial modality. Outcomes from these studies are important; however, limitations and inconsistencies must be evaluated.

Six of the 11 studies use a sample size of less than 110 participants. Four of those include less than 40 participants. Additionally, out of the 11 primary

Figure 1. Manuscript selection methodology.



studies, only 2, Seguranyes et al. (2014) and Ahmed et al. (2016), are designed as a randomized control trial and only Ahmed et al. (2016) found an increase in exclusivity and duration. The Seguranyes et al. (2014) study states similar outcomes in the intervention and control group. It is important to note that the control group in the Seguranyes et al. (2014) study also receives intervention in the form of face-to-face office support and therefore not considered telehealth intervention strategy. This study requires careful attention as both groups receive breastfeeding support, listing similar outcomes related to exclusivity and duration, leading results to suggest telehealth support has similar efficacy as face-to-face support in the studied population.

Small, focused, and nonrandomized samples in this review leave it unclear if support through telehealth has a similar relation with breastfeeding exclusivity and duration on larger, more diverse populations. Additionally, differing implementation strategies in the various studies limit comparisons. Five of the studies use videoconferencing, two use phone services, two use internet-based resources, and two use varied

methods that include videoconference, phone, and internet resources. Ten of the 11 studies describe increased exclusivity and duration or perceived acceptance. This suggests that telehealth is effective and useful; however, it is difficult to recommend which telehealth modality is most closely related to the desired outcomes.

Other considerations include varied educational content. Although varied, content includes topics related to anticipatory guidance, latch and positioning, and more. Sources of education and support content differ greatly between the selected studies and include healthcare professionals, IBCLC, peer counselors, internet-based nonprofessional resources, social networking groups, and print information. Habibi et al. (2012) and Guijarro et al. (2014) do not list the content of the breastfeeding support. The content and source of education and support lack consistency between the selected studies, making it difficult to define which modalities and delivery methods are most effective.

Further studies are recommended with tightly controlled variables related to randomized sample, telehealth

Table 1. Exclusivity and Duration of Breastfeeding With Telehealth Breastfeeding Education and Support

Author (Year)	Country	Sample Size	Exposure	Outcome(s)	Results
Guijarro, Sanchez, and Fernandez (2014)	Spain	96	Group videoconference social network sites	Telehealth is effective and efficient in improving child health including breastfeeding exclusivity in a pediatric primary care setting.	36% of study participants continued exclusive breastfeeding through 6 months of age in the intervention group, compared to 18.6% in the control group.
Jiang et al. (2014)	China	582	SMS	Increased breastfeeding exclusivity and duration in the intervention group when compared to the control group.	Duration of breastfeeding in intervention group compared to control: 11.41 (95% CI [10.25, 12.57]) vs. 8.87 (95% CI [7.84, 9.89]) weeks. Exclusivity of breastfeeding in intervention group compared to control: 2.67 (95% CI [1.45, 4.91])
Reeder, Joyce, Sibley, Arnold, and Altindag (2014)	United States	1,948	Phone contact	Exclusive breastfeeding was greater at 6 months among Spanish-speaking clients and nonexclusive breastfeeding duration was greater at 3 months for all postpartum women in the intervention group.	Exclusive breastfeeding at 6 months in Spanish-speaking clients: (adjusted odds ratio: 0.78; 95% CI [0.68, 0.89]). Nonexclusive breastfeeding duration in intervention group compared to control: (adjusted relative risk: 1.22; 95% CI [1.10, 1.34])
Seguranyes et al. (2014)	Spain	1,401	Videoconference and phone contact	The prevalence of breastfeeding was similar in the control group and intervention groups.	No significant differences between study participants that used the videoconferencing and telephone support compared to those that used face-to-face and in-office support
Ahmed, Roumani, Szucs, Zhang, and King (2016)	United States	106	Internet-based interactive breastfeeding monitoring system	Intervention group had higher exclusive breastfeeding rates at 1, 2, and 3 months. By month 3, 84% of the intervention group was breastfeeding compared to 66% in the control group.	No significant differences in breastfeeding outcomes were found between groups at discharge ($p = 0.707$). A significant difference in breastfeeding outcomes was found between groups at 1, 2, and 3 months ($p = 0.027$, $p = 0.000$, and $p = 0.002$).
Newby, Brodribb, Ware, and Davies (2015)	Australia	277	Varied internet-based breastfeeding assistance	Participants who found breastfeeding assistance over the internet helpful have longer and more exclusive breastfeeding than those who did not find internet-based assistance helpful.	Participants who found it unhelpful had lower odds of giving breast milk at 6 months (OR = 0.3; 95% CI [0.1, 0.5]) and higher odds of giving formula (OR = 3.3; 95% CI [1.7, 6.5]) compared with those who found the help they needed

Note. OR = odds ratio; CI = confidence interval; SMS = short message services.

modality, and breastfeeding education and support content. These further studies should also tightly control the quality of content, including use of IBCLC to better understand the relationship to breastfeeding exclusivity and duration when delivered through telehealth.

Conclusion

Postpartum women should have breastfeeding education and support as it is clearly associated with increased breastfeeding exclusivity and duration (Guise et al., 2003). Use of telehealth to deliver this support provides a modern way to reach postpartum families and increase breastfeeding outcomes related to exclusivity and duration. Furthermore, telehealth is perceived as an acceptable and beneficial modality to receive sensitive health education. This is important as it promotes its successful use with

postpartum families regarding personal information related to infant feeding and the maternal infant dyad.

In addition to the improved breastfeeding outcomes the use of telehealth provides postpartum families, it also provides an alternative intervention strategy for breastfeeding and lactation professionals. Differing from traditional face-to-face delivery of breastfeeding support, telehealth can allow professionals flexibility in delivery of education as location and distance are less present as barriers. Other implications to consider for professionals include possible increased continuity of care and access to clients through telehealth compared to face-to-face interactions.

Further considerations that would be important to explore include barriers to telehealth, financial implications, and disparities present. In this modern age of rapidly growing population and developing technology, telehealth presents

Table 2. Perception of Telehealth Breastfeeding Education and Support

Author (Year)	Country	Sample Size	Exposure	Outcome(s)	Results
Ahmed and Ouzzani (2012)	United States	26	Internet-based interactive breastfeeding monitoring system	The interactive web-based breastfeeding monitoring system LACTOR was perceived as an acceptable and beneficial modality related to infant feeding patterns	The Feasibility of LACTOR was established by mothers' compliance in entering their breastfeeding data. The mean was 8.87 (SD = 1.21) daily entries, and the range was 6-13 times per day. Usability scale total mean score was 3.35 (SD = 0.33; scale range 0-4).
Friesen, Hormuth, Petersen, and Babbitt (2015)	United States	35	Videoconference	Breastfeeding support delivered via videoconference was perceived by most participants as simple to use and beneficial.	No statistical information regarding perception of telehealth was included in the study.
Habibi et al. (2012)	United States	12	Videoconference and phone contact	Overall, participant responses to videoconferencing support were positive.	Three themes emerged related to perception of videoconference and phone support and included maternal interaction with technology, accuracy and trust determines acceptability, and conditional general acceptance of telehealth as a treatment modality.
Roberts, Hoddinott, Heaney, and Bryers (2009)	Scotland	403	Varied non-face-to-face modalities	Non-face-to-face breastfeeding support was not preferred by respondents over face-to-face options.	Less than 25% of respondents would definitely or probably use telehealth modality for breastfeeding support, stating they preferred face-to-face support.
Rojjanasrirat, Nelson, and Wambach (2012)	United States	10	Videoconference	Videoconference was perceived as an acceptable and comfortable modality to discuss breastfeeding concerns. Additionally the LATCH breastfeeding support and evaluation tool has high accuracy when performed using videoconference.	The percentage agreement on the LATCH scores ranged between 40% to 100% during the first visit and 80% to 100% during the second visit. All participants "strongly agreed" that they were comfortable talking about breastfeeding concerns using home videoconferencing.

Note. SD = standard deviation.

as a promising modality to deliver breastfeeding education and support, promoting improved breastfeeding outcomes.

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