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The Effects of Introducing Prenatal Breastfeeding Education in the Obstetricians' Waiting Rooms

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**The Effects of Introducing Prenatal Breastfeeding
Education in the Obstetricians' Waiting Rooms**

By

Donna Manlongat

A Thesis
Submitted to the Faculty of Graduate Studies
through the Faculty of Nursing
in Partial Fulfillment of the Requirements for
the Degree of Master of Science in Nursing
at the University of Windsor

Windsor, Ontario, Canada

2017

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Education in the Obstetricians' Waiting Rooms**

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DECLARATION OF ORIGINALITY

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ABSTRACT

The literature has reported great benefits of breastfeeding for both the mother and newborn. In light of the low numbers of women breastfeeding in Ontario, even fewer women attending prenatal classes, and limited amount of cost free prenatal classes available, a need was identified to consider alternate modes of prenatal breastfeeding education. The purpose of this thesis was to explore the effects of providing self-directed study materials in the forms of breastfeeding education videos, smartphone applications, and reading materials to prenatal women during their third trimester appointments in the obstetrician's waiting room. The idea of presenting innovative modes of prenatal breastfeeding education in the obstetrician's waiting room was brought about to introduce the breastfeeding topic to women who were unfamiliar with breastfeeding, enhance the learning experiences women may have already had in prenatal classes, and help to stimulate breastfeeding conversations with their nurses and obstetricians. This study found the support of a significant other was significantly related to breastfeeding intention. Also, introducing the prenatal education resources in the obstetrician's waiting room, significantly increased breastfeeding attitudes and knowledge among the participant group. Introducing prenatal breastfeeding education in the obstetrician's waiting room can potentially increase breastfeeding rates within Windsor-Essex County, which can in turn, improve the condition of maternal and newborn health within the community.

DEDICATION

I would like to dedicate this work to all of the mothers I have supported as a staff nurse on the Maternal Newborn unit of Windsor-Essex County. It is through these experiences I had become passionate in advancing breastfeeding education throughout the community. I would also like to dedicate this thesis to the mothers who participated in this research. Without them, this study would not have been possible.

ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTION

Background and Significance of the Problem

Those with breastfeeding knowledge and positive attitudes towards breastfeeding are more likely to initiate breastfeeding for a prolonged period of time (Huang et al., 2007). The World Health Organization (WHO, 2015a) suggests exclusively breastfeeding infants up to six months of age, however Ontario's breastfeeding rates at hospital discharge are at 62.1% with declining rates continuing to six months postpartum (Best Start Resource Centre, 2015). For this study, the WHO definition of "exclusive breastfeeding" was used, which is defined as "no other food or drink, not even water, except breast milk (including milk expressed or from a wet nurse) for six months of life, but allows the infant to receive oral rehydration solutions, drops and syrups (vitamins, minerals, and medicines)" (WHO, 2015b, p. 1). Wet nursing is the sharing of breast milk from a lactating woman to nourish a newborn when the newborn's mother is not capable of breastfeeding (Thorley, 2008).

Breastfeeding is a form of health promotion and disease prevention (Arlotti, Cottrell, Lee, & Curtin, 1998). Health promotion is defined as "the process of enabling people to increase control over, and to improve, their health. It is beyond a focus on individual behavior towards a wide range of social and environmental interventions" (Bert, Giacometti, Gualano, & Siliquini, 2014, p. 2). Not only do the newborns benefit nutritionally and immunologically when breastfed, the women gain physiological, social, hygienic, and economic benefits that in turn decreases society's health care costs as a whole (Arlotti et al., 1998).

According to Statistics Canada (2013), 91.8% of women in Ontario initiated breastfeeding at least once during the years of 2012 and 2013. During that same time period, the Better Outcomes Registry and Network (BORN), a database on every birth in Ontario, revealed 61.5% of Ontarian women exclusively breastfeeding at hospital discharge with the lowest Ontario rate in the Erie St. Clair Local Health Integration Network region, consisting of Chatham-Kent, Sarnia/Lambton, and Windsor-Essex County, at 54.1% (Best Start Resource Centre, 2014b). The BORN data does not include any newborns that delivered at less than 37 weeks gestation or newborns delivered at home with a midwife (Best Start Resource Centre, 2014b). Ontario has a notable difference in breastfeeding rates between women who obtain prenatal care from a midwife (84.3%) compared to women's health physicians (58.7%) (Best Start Resource Centre, 2015). A study by Dusdieker, Dungy, and Losch (2006) found that all nurse midwife participants had initiated breastfeeding conversations with their patients by asking them what their plans were in feeding their infants, whereas 85% of obstetricians reported discussing breastfeeding initiation with their patients. There is currently no breastfeeding information provided to women in obstetricians' offices in Windsor.

Prenatal breastfeeding education can help prepare women to breastfeed effectively (Gill, Reifsnider, & Lucke, 2007; Rempel & Moore, 2012; WHO, 1998) by building their confidence levels, knowledge, and skills (WHO, 1998). Prenatal classes, a form of prenatal breastfeeding education, has been found to increase positive breastfeeding attitudes (Huang et al., 2007) and significantly influence breastfeeding initiation and continuation rates (Arlotti et al., 1998; Caine, Smith, Beasley & Brown, 2012; Rosen, Krueger, Carney, & Graham, 2008; Stoll & Hall, 2012; Tighe, 2010). Even

though there are free of cost prenatal education classes offered throughout Ontario by local public health units, there was only a 25% prenatal class attendance rate in 2012/2013 Ontario-wide (Best Start Resource Centre, 2014a). A belief that information can be obtained from other sources, lack of time to access resources, and lack of awareness of public resources are the chief reasons documented as to why women in Ontario do not attend a prenatal course (Best Start Resource Centre, 2014a).

Subsequently, out of the 3,905 live hospital births in Windsor-Essex County in 2013 (Better Outcomes Registry and Network, 2013), 22.5% self-reported that they had attended prenatal classes. During the same time period, it was discovered 9.9% of women were registered under Windsor-Essex County Health Unit's (WECHU) cost free in-class or online prenatal programs (D. Silvester, personal communication, April 7, 2015). Other resources for prenatal education available to the public included prenatal classes held by the Victorian Order of Nurses, other nurses, midwives, doulas, and peers. During this time period, there was a prenatal class available in Windsor that was run by maternal newborn nurses developed in collaboration with some of the obstetricians of Windsor, however these classes were not run by the obstetricians and contained a financial cost to attend. Specifically, prenatal breastfeeding support was available monthly through publicly open La Leche League meetings held by lactation consultants and attended by prenatal peers and postpartum breastfeeding women. Recently in December of 2015, the cost free WECHU group prenatal classes that were offered on site at both the downtown Windsor location and the Leamington location were discontinued due to a large change over in the staff department (K. Lukic, personal communication, June 10, 2016).

The online prenatal programs with WECHU are still available with the option of an in-class breastfeeding session. The online prenatal program includes illustrations, videos, audio with text, and quizzes, which can take six to eight hours to complete (WECHU, 2016b). Anecdotally, when discussing with prenatal Windsorites the reasoning as to why prenatal classes were not taken during their pregnancy, their responses were that the classes were full, they did not have the funds to pay for them, they attempted to sign up with no return phone call, or they felt there was no need for them. Thirty-eight breastfeeding related resources resulted from an extensive internet search on breastfeeding resources within Windsor-Essex County, however health care professionals at Windsor Regional Hospital and the Windsor-Essex County Health Unit were more so familiar with five or fewer resources within the list when questioned (Appendix A).

When navigating through search engines online to find other resources surrounding the topic of breastfeeding, it was difficult to decipher which resources were current and evidence-based. When using the World Wide Web, it is essential to review the information provided with a critical eye, as information found can be unreliable (Pugh & Revell, 2011). Caution should be used when choosing prenatal educators or deciding to work with breastfeeding educators, to ensure that licensures or certifications has been maintained, and their practice is current and evidence-based. Women should be wary when seeking breastfeeding advice through non-evidence-based sources such as peer support groups. Some information and support from these peer groups may be useful, however may also lead to risky outcomes if taken as medical advice. Anecdotally, when reviewing some comments through a peer support group online, some women were

selling their breast milk and breast pumps to other women in the group. Women may be too trusting in other women in accepting these items without being knowledgeable about the health risks involved.

With only 22.5% of the 2013 prenatal population in the community attending prenatal classes, other ways to disseminate reliable information to the rest of the prenatal population were examined. Therefore, introducing the concept of breastfeeding and providing evidence-based breastfeeding education to pregnant women during obstetrician visits is an innovative approach to bring breastfeeding awareness to women, and help prepare them for breastfeeding in the postpartum period. There is a limited number of older and recent journal articles studying the effects of prenatal education on breastfeeding. The idea of introducing breastfeeding education in an obstetrician's office and the effects it has on prenatal women is an innovative concept that has yet to have been studied to date.

Significance to Nursing

Physicians generally have 10-12 prenatal appointments with women where breastfeeding intentions and breastfeeding information can be exchanged, however studies have reported that physicians receive minimal instruction on breastfeeding physiology and problem management in their training (Freed, Clark, Sorenson, Lohr, Cefalo, & Curtis, 1995a; Freed, Clark, Lohr, Sorenson, 1995b). The Registered Nurses Association of Ontario (RNAO) identified breastfeeding education as a significant prenatal topic in the Breastfeeding Best Practice Guidelines for Nurses (RNAO, 2003). The RNAO is a professional nursing association promoting excellence in nursing practice (RNAO, 2015). Their Breastfeeding Best Practice Guidelines for Nurses report

recommends nurses endorse breastfeeding practices in the hospital and community, prenatally and postnatally (RNAO, 2003). The RNAO (2003) also recommends nurses offer small, informal group health education classes in the prenatal period in order to have greater breastfeeding initiation rates. The La Leche League (LLL), a pro-breastfeeding group, started a breastfeeding movement outlining the influence nurses have in increasing women's breastfeeding abilities in 1972 (Martucci, 2012). The LLL is a resource for reliable breastfeeding information for women, including nurses (Martucci, 2012). The League stresses the important role nurses have as caring and supportive figures for breastfeeding (Martucci, 2012).

According to the Massachusetts Nurses Association, it is essential for nurses to determine their own beliefs about breastfeeding in order to prevent personal bias from influencing their patients' feeding practices (Martucci, 2012). Dusdieker et al. (2006) suggests that nursing staff who have had personal positive breastfeeding experiences are valuable resources for mothers who intend to breastfeed because of their higher comfort level and knowledge from their personal experiences. Martucci (2012) argues the sporadic changes in nursing education provide little breastfeeding education making personal breastfeeding experience an essential factor for postpartum nurses to support breastfeeding. This may be problematic, as personal breastfeeding experience is not a requirement to work on Maternal Newborn units. Nurses with positive personal breastfeeding experiences may positively influence their patients' breastfeeding outcomes (Dusdieker et al., 2006). Conversely, nurses who were personally unsuccessful in breastfeeding found it difficult to support mothers in this practice (Martucci, 2012). The

LLL emphasizes the importance of nurses providing breastfeeding support especially in the first few days of hospitalization to minimize anxieties (Martucci, 2012).

Although nurses have the responsibility of supporting the Baby-Friendly Hospital Initiative within their health care facilities, breastfeeding promotion needs to start in the community (RNAO, 2003). The RNAO (2003) recommends all nurses who work with prenatal populations be knowledgeable in the personal and demographic factors that influence breastfeeding initiation. Nurses need to be aware of a woman's breastfeeding intention, accessibility to breastfeeding support, and breast/nipple anatomy (RNAO, 2003). The RNAO (2003) also states that nurses need to understand that a woman's care partner and her surrounding health care workers may be influential depending on their attitudes towards breastfeeding. Community health nurses can work in diverse positions with prenatal populations such as: Clinical Nurse Specialist, Clinical Resource Nurse, Clinical Educator, Physician Office Nurse, Primary Care Nurse, and Public Health Nurse (Schofield et al., 2009). It is expected that nurses provide prenatal education to expectant women and their family members to assist them in making informed decision regarding breastfeeding (RNAO, 2003). Examples of such breastfeeding education should include the benefits of breastfeeding, lifestyle issues that affect breastfeeding, milk production, breastfeeding positions, proper latching, transfer of milk, prevention of breastfeeding issues, management of breastfeeding issues, medical interventions during labour that may affect breastfeeding initiation, when to ask for assistance, and where to obtain these resources (RNAO, 2003). To establish a supportive relationship with breastfeeding women, nurses need to be knowledgeable in the benefits of breastfeeding, implementation of breastfeeding, and management of breastfeeding (RNAO, 2003).

Problem Statement and Study Purpose

In light of the low numbers of women breastfeeding in Ontario, even fewer women attending prenatal classes, and limited amount of cost free prenatal classes available, a need was identified to consider alternate modes of prenatal breastfeeding education through educational videos, smartphone applications, and reading materials. The idea of presenting innovative modes of prenatal breastfeeding education in the obstetrician's waiting room was meant to introduce the breastfeeding topic to women who were unfamiliar with breastfeeding, enhance the learning experiences women may have already had in prenatal classes, and help to stimulate breastfeeding conversations with their nurses and obstetricians. This may be the novel idea needed to initiate breastfeeding education to the majority of the prenatal population throughout Ontario. The purpose of this thesis was to explore the effects of providing self-directed study materials in the forms of breastfeeding education videos, smartphone applications, and reading materials to prenatal women during their third trimester appointments in the obstetrician's waiting room.

CHAPTER II

LITERATURE REVIEW

Search Strategy

The subsequent literature was obtained from the following databases: Cochrane Library; Cumulative Index to Nursing and Allied Health Literature (CINAHL); Medline via OVID; and Proquest Nursing and Allied Health Source Journals. The following key search words were included: prenatal education and purpose, prenatal education and mode, prenatal education and delivery, prenatal education and approach, prenatal education and barriers, prenatal education and community, prenatal education and internet, prenatal education and waiting room, prenatal education and breastfeeding, antenatal breastfeeding education, prenatal breastfeeding education, breastfeeding education and technology, education and mobile app, health teaching and phone app, upstream, and Rainbow Model. The bundled search words used in CINAHL were: 1) health promotion OR health education OR health training OR health teaching OR childbirth education OR prenatal education, 2) prenatal OR pre-natal OR pregnan* OR expectant mother OR antenatal OR maternity* care, and 3) waiting room* OR doctor's office OR clinic OR clinics OR video* OR print material OR pamphlet* OR brochure*. Another bundled search was completed in CINAHL to examine the influence multiparity has on breastfeeding, using the search words: 1) breast*, and 2) multipara.

The literature search revealed a limited number of 33 published journal articles related to breastfeeding and prenatal education. The search resulted in 6 journal articles that were relevant to the influence that multiparity has on breastfeeding. Grey literature was obtained from the Windsor-Essex County Health Unit, BORN database, Health

Canada website, Registered Nurses Association of Ontario, and WHO in order to obtain statistics and government reports. Since none of the previously identified journal articles and grey literature contained the topic of using smart phones and phone applications for prenatal education, a separate CINAHL search was performed resulting in 3 published journal articles when using the search terms: education, health teaching, phone app, and mobile app. There was an identified gap in the literature pertaining to the topic of introducing prenatal breastfeeding education into the obstetrician's waiting rooms as the literature search found no relevant journal articles.

Breastfeeding

Evidence-based research supports the benefits of exclusively breastfeeding until the infant reaches at least six months of age to promote healthy growth and development (WHO, 2015a). The Ten Steps to Successful Breastfeeding document by the WHO (1998) provides evidence driven recommendations towards breastfeeding exclusivity. Antenatal preparation is one of the identified recommendations within this document (WHO, 1998). The WHO and the United Nations International Children's Emergency Fund (UNICEF) recommend initiating breastfeeding within an hour from birth, exclusively breastfeeding, breastfeeding on demand, and refraining from artificial nipple introduction in order for mothers to establish an exclusive breastfeeding goal of six months (WHO, 2015a). The Baby-Friendly Initiative has been implemented across Canada and is based on the previously mentioned Baby-Friendly Hospital Initiative (Breastfeeding Committee for Canada, 2012). The Baby-Friendly Initiative is an integrated approach between hospitals and community health services to promote and support exclusive breastfeeding (Breastfeeding Committee for Canada, 2012).

A study by Artolli, Cottrell, Lee, and Curtin (1998) found that infants who were given formula prior to establishing breastfeeding were at an increased risk for breastfeeding failure. The UNICEF (2015) reports that feeding formula to a breastfed baby causes a decrease in milk production. Higher rates of exclusive breastfeeding are strongly related to longer duration of breastfeeding (Artolli et al., 1998).

Supporting Evidence for Breastfeeding

Research has shown great benefits of breastfeeding for both the mother and infant. Postpartum benefits include less risk of: postpartum hemorrhage, quicker uterine involution, earlier return to pre-pregnant body weight, less financial strain, less risk of postmenopausal hip fractures, less risk of premenopausal breast cancer, and less risk of ovarian cancer (RNAO, 2003; Rosen et al., 2008; WHO, 2015a). Mental health benefits have also been noted due to the positive feelings associated with the oxytocin release that results for mother-baby bonding (RNAO, 2003), specifically a decreased risk of postpartum depression (Callen & Pinelli, 2004).

Breast milk contains all of the nutrition that an infant needs for the first months of life as it provides enough energy and nutrients as a natural food for babies (RNAO, 2003; WHO, 2015a). Breast milk consists of omega-3 fatty acids docosahexaenoic acid (DHA) and alpha-linolenic acid (ALA), which is not supplemented in artificial milk (RNAO, 2003). These omega-3 fatty acids assist in the development of both the retina and brain throughout the first year of life (RNAO, 2003).

Breastfed infants will generally experience health benefits such as decreased risks for many acute and chronic diseases (American Academy of Pediatrics, 1997; American dietetic Association, 1997; Rosen et al., 2008), increased sensory and cognitive

development, and protection against infection (American Academy of Pediatrics, 1997; American Dietetic Association, 1997; Caine et al., 2012; WHO, 2015a). There has been evidence of breast milk providing protection against gastrointestinal infections and otitis media in developed countries (RNAO, 2003). Breastfed babies are also less likely to develop asthma and are associated with lower incidences of Sudden Infant Death Syndrome (SIDS), childhood injuries, obesity, diabetes, cancer, and hypertensive diseases (Caine et al., 2012). Breastfeeding exclusively has been shown to have a protective effect on those that have a family history of allergies, but does not have an effect on those with no family history of allergies (RNAO, 2003). Furthermore, dentists recommend breastfeeding because it assists with the proper development of infants' oral cavity (RNAO, 2003). Finally, exclusively breastfeeding can reduce infant mortality by aiding quicker recovery times for common childhood illnesses such as diarrhea and pneumonia (WHO, 2015a).

Benefits of Attending Prenatal Class

While some may argue breastfeeding is a natural act, it is also a learned behavior that requires active support for initiating and maintaining the breastfeeding practice (Lothian, 1995; WHO, 2015a). Postpartum mothers without physical abnormalities should be able to produce enough milk supply for her infant (Huang et al., 2007). Prenatal breastfeeding education is helpful in preparing women to successfully initiate breastfeeding (Gill et al., 2007; Rempel & Moore, 2012; WHO, 1998). It also enables mothers to breastfeed independently by increasing their knowledge and confidence in maintaining proper breastfeeding positions (WHO, 1998). Providing an educational foundation surrounding maternal and fetal health topics prenatally decreases maternal

anxieties related to post-partum expectations (Pugh & Revell, 2011). Prenatal education can increase breastfeeding rates if it builds the mothers' confidence levels, knowledge, and skills (WHO, 1998). Huang et al. (2007) also supported this with their findings of higher breastfeeding rates among mothers who had higher breastfeeding knowledge and positive breastfeeding attitudes. Even short discussions on breastfeeding may be beneficial, however the WHO has yet to find specific experimental evidence in their literature search (WHO, 1998). The WHO (1998) reported the importance of having a prenatal discussion to cover the topics of breastfeeding exclusively for four to six months, breastfeeding benefits, and breastfeeding management to inform and motivate all pregnant women. Additionally, a study by Karanci and Yenal (2014) also indicated a need for educating pregnant women on safe breastfeeding practices and milk storage upon returning to work. Pregnant women were found to have limited knowledge in breast milk expression, breast milk storage, and their breastfeeding legal rights, which would affect milk supply for those returning to work early (Karanci & Yenal, 2014).

Ultimately, prenatal classes provide a cornerstone framework in supporting and preparing parents for lactation and breastfeeding (Tighe, 2010; Wright et al., 1996) because prenatal breastfeeding education significantly influences the initiation and amount of time women breastfeed (Arlotti et al., 1998; Caine et al., 2012; Rosen et al., 2008; Stoll & Hall, 2012; Tighe, 2010). Prenatal education empowers women by providing information, support, and guidance both prenatally and in the postpartum period (Tighe, 2010). A study by Risica and Phipps (2006) stated 47% of their respondents indicated an interest in receiving breastfeeding information. Rosen et al. (2008) found women who attended prenatal breastfeeding classes were more likely to

continue breastfeeding through the six-month postpartum mark. Dyson, McCormick, and Renfrew (2005) supported this finding in their systematic review where they also determined prenatal breastfeeding education has a significant impact on increasing breastfeeding initiation rates. Education of new mothers and their partners are especially recommended to limit the gap between actual breastfeeding rates and breastfeeding rate goals (Rosen et al., 2008).

A systematic review by Couto de Oliveira, Bastos Camacho, and Tedstone (2001) identified the most effective interventions for breastfeeding rates had included long-term face-to-face information, guidance, and support. Interventions provided during the prenatal and postnatal phase were found to be more effective than interventions provided solely in the postnatal phase (Couto de Oliveira et al., 2001). The most effective interventions identified through this review were prenatal classes, home classes, and individual learning sessions spanning the prenatal and postnatal phase (Couto de Oliveira et al., 2001).

Approaches to Prenatal Education

All group prenatal classes within Windsor-Essex County are provided from public resources, such as the local health unit and community-based organizations. Building Blocks for Better Babies (BBBB) is a government funded program geared towards supporting women in the prenatal or postpartum period affected breastfeeding barriers such as, low income, malnutrition, teen pregnancy, social and physical isolation, minority status, substance abuse, and physical abuse (BBBB, n.d.). They provide food gift certificates, vitamin vouchers, nutritious snacks, and childcare at every class (BBBB, n.d.). Public health nurses and registered dieticians run the pregnancy, birth, nutrition,

and breastfeeding classes at three different locations through Windsor-Essex County, however transportation vouchers are no longer provided (BBBB, n.d.). The WECHU has a home visiting program, Healthy Babies Healthy Children, where those identified as high-risk mothers (prenatal women who are negatively affected by a number of determinants of health determined by their health care provider or by self-referral) are offered additional support at home by one on one prenatal visits from a public health nurse (WECHU, 2016a). These visits consist of information on pregnancy, birth, and breastfeeding (WECHU, 2016a). This program requires a referral from health care providers or self-referral from women to identify mothers who are negatively affected by determinants of health to the program. The referral sheet contains 36 questions related to the determinants of health and anyone who is flagged with two risk factors out of the thirty-six will get a house call from a public health nurse, however the referral forms are not a part of the routine paperwork required of health care providers in their office or nursing staff at the hospital. There are also breastfeeding clinics offered at the WECHU that require self-referral. The prevalence of high-risk women missed through these systems is unknown.

Risica and Phipps (2006) documented participant preferences for obtaining prenatal information from their doctor or nurse compared to other sources. In an Ontario survey, women reported assuming prenatal education programs as less reliable sources of information compared to health care providers, family, friends, and colleagues, due to unknown reasons (Best Start Resource Centre, 2014a). Multiparas (women who have delivered more than one child) have reported finding their health care providers as more useful than attending education classes (Stoll & Hall, 2012). Berman (2006) found that

61% of their study sample believed the most accurate pregnancy-related information was obtained from their health care provider as opposed to a childbirth educator or family member. Unfortunately, women have reported that their doctors or midwives do not take the time to encourage them to attend prenatal classes or explain their importance (Tighe, 2010). In comparison, a survey by Dusdieker et al. (2006) reported nurse midwives as the stronger advocates of breastfeeding (64%) compared to family practitioners (13%) and obstetricians (7%). This supports the need to introduce breastfeeding education to women in their obstetricians' offices prenatally to stimulate breastfeeding conversations.

In a study of low-income women, Arlotti et al. (1998) asked women where they obtained their breastfeeding education and determined the more highly utilized breastfeeding resources used by more than 50% of their participants in descending order were: nutritionists, friends, books and magazines, pamphlets, doctors, family members, and hospital nurses. Underutilized resources, used by less than 50% of the participants, in descending order were identified as: hospital videos, childbirth classes, peer counselors, television and radio, videos at home, breastfeeding support groups, and breastfeeding classes (Arlotti et al., 1998). Gao, Larsson, and Luo (2013) identified that although women seek medical information over the internet, there is ultimately a need to question how reliable the information provided is. A more recent study, the Prenatal Education Needs Assessment, conducted in Windsor-Essex County by WECHU determined that the preferred method of learning by the participants was reading books, followed by taking an in-class course and taking a combination in-class/online course (WECHU, 2012). This survey discovered that the expectant women of Windsor-Essex County prefer to learn about pregnancy, childbirth, and newborn care by reading books,

regardless of their age, parity, education, and income (WECHU, 2012). This notion is also supported by Risica and Phipps (2006) who determined in their study that their participants preferred individual meetings with health care professionals (72%), printed educational materials (58%), and videos (54%) as opposed to group classes (19%). Huang et al. (2007) suggests providing patients with a format that provides flexibility for the participants' time allowance and learning style in order to permit them to find breastfeeding information of importance to them.

A systematic review, as well as two trials in Italy and Australia, found when study participants were provided with printed booklets, there was no impact on the outcome of breastfeeding prevalence (Couto de Oliveira et al., 2001; Curro, Lanni, Scipione, Grimaldi, & Mastroiacovo, 1997; Hauck & Dimmock, 1994). Couto de Oliveira et al. (2001) also noted that brief breastfeeding education provided among other prenatal education topics were found to be the least effective. These inconsistent findings support the need to research the effect diverse learning options have on breastfeeding outcomes.

Literature supports the use of educational videos to improve knowledge among low literacy and minority populations (LaVista, Treise, Dunbar, Ritho, Hartzema, & Lotteberg, 2009; Sobel, Paassche-Orlow, Waite, Rittner, Wilson, & Wolf, 2009). Educational messages shown through video use may stimulate specific health questions that can be addressed during prenatal appointments with health care providers (DeStephano, Flynn, & Brost, 2010). In fact, educational videotapes shown in outpatient waiting rooms have been introduced in the United States (Freda et al., 1994). This concept has had little research done on the educational effect, however, Freda et al. (1994) has found advantages of introducing educational videotapes in waiting rooms in

their study since the waiting room can potentially be used as valuable time to introduce educational topics. Even through the barriers of women needing to retain information learned in noisy and crowded waiting rooms, Freda et al. (1994) found that overall knowledge scores did in fact increase in their intervention group. Freda et al. (1994) found statistical significance in content learned for those aged 26-30, multiparas, women with 9-12 years of education, and Hispanics, compared to no significance found in women under the age 20 and over 30, primiparas, those with less than a grade 8 education or more than a grade 12 education, and women who described themselves as black, white, or other than Hispanic.

Similarly, Berman (2006) determined their foreign-born, Hispanic, minority participants preferred learning activities such as videos as opposed to attending prenatal education classes. Breastfeeding information was provided via videotapes to a group of Vietnamese women in a study by Rossiter (1994) and the intervention group was found to be twice as likely to breastfeed from birth up to six weeks than the control group.

DeStephano et al. (2010) performed a pilot study with Somali clients and also supported the use of prenatal education videos. The Somali participants strongly recommended the use of video health education if presented in the Somali language (DeStephano et al., 2010).

A novel addition to obtaining information is via smartphone applications. A smartphone is defined as “any cellular device that has additional functions including camera, global positioning system, and Wi-Fi capabilities” (Bert et al., 2014, p. 2). Smartphones are readily available for use whenever needed because they are generally carried by individuals throughout the day and are always powered on (Kuhn et al., 2014).

Public use of smartphones are generally perceived as normal, making it easy for individuals to access medical information without questions raised by others (Kuhn et al., 2014). Smartphone applications are a convenient method for patients to obtain information as long as the health information provided is credible, evidence-based, and monitored for updated content (Bert et al., 2014; Power & Gordon, 2015). The widespread distribution, and their small size, makes smartphone use an easy source for health information (Bert, et al., 2014). The promotion of health education through smartphones is promising, as long as adequate training is provided to patients and health care providers on the application use (Bert et al., 2014). Smartphones could play a complementary role for health care providers in the health management of their patients (Bert et al., 2014).

Individuals need to be cautious in using smartphone applications as a sole form of communicating health promotion as it may create a digital divide, especially between patients and their health care providers (Bert et al., 2014). A digital divide can be created between those who can or cannot effectively use new information tools, such as the internet, and by those of low and middle/high socio-economic statuses (Bert et al., 2014). The cost of a new generation smartphone with Internet connection may be out of financial reach of some individuals, causing inequalities between populations (Bert et al., 2014).

Determinants of Health

The Ontario Ministry of Health and Long Term Care (2008) outline the determinants of health that influence health outcomes: income and social status, social support networks, education and literacy, employment/working conditions, social and

physical environments, personal health practices and coping skills, healthy child development, biology and genetic endowment, access to health services, gender, culture, and language. The WECHU (2014) composed a report, Social Determinants of Health in Windsor-Essex County, which outlined how the determinants of health affect health outcomes and health behaviours in the community. The WECHU (2014) used data from the Canadian Community Health Survey to investigate the impact the determinants of health has on population health, specifically the social determinant variables such as: income, education, social inclusion/exclusion, and employment status. The preceding Social Determinants of Health variables were found to have significant impact on the health of the residents of Windsor-Essex County. The Social Determinants of Health in Windsor-Essex County report identified the importance of recognizing the variables associated in determining health outcomes, and found those with a low income, a low level of education, females, minorities, and immigrants being less likely to report a good to excellent health status (WECHU, 2014). Although this report did not examine the relationship between the determinants of health and access to obtaining breastfeeding education, a Prenatal Education Survey Report completed by the WECHU (2012) determined that regardless of age, parity, education, and income, the survey participants preferred learning about newborn care by reading materials as opposed to in-class courses or combined in-class and online courses.

A literature review completed by the Best Start Resource Centre (2014b) revealed various factors negatively correlated with breastfeeding success in Ontario: less than 20 years of age; primary language other than English or French; underweight, overweight, obese; unmarried; less education, unemployed, low income; minorities and immigrants;

cesarean section deliveries; existing health conditions, mental health concerns; and drug or substance exposure in pregnancy. Vonderhead, Norr, and Handler (2007) identified those at higher risk of adverse outcomes due to low breastfeeding rates as adolescents, primiparas (first time mothers), and women in low-income status. They also identified breastfeeding education as having the highest positive influence in breastfeeding rates among those populations (Vonderhead et al., 2007).

There are no consistent determinants of health found to affect the well-being of individuals, instead the determinants interact with each other and further influence the health of an individual when a number of factors apply to them (WECHU, 2014). Studies have found women with low income, less education, lower socioeconomic status, and a younger age were significantly less likely to attend prenatal classes (Fabian, Radestad, & Waldenstrom, 2004; Stoll & Hall, 2012). Neighbourhoods with lower levels of education, higher unemployment rates, lower income, higher immigrant proportions, and higher minority rates were also found to have lower class attendance in Ontario (Best Start Resource Centre, 2014a). Previous studies done in Taiwan have also shown a positive correlation between maternal age, education, employment, breastfeeding intention, and previous breastfeeding experience with the initiation and duration of breastfeeding (Gau, 2004; Chien et al., 2005). Those with lower levels of education and those who identify themselves as minorities, tend to have lower incidences of breastfeeding outcomes with a higher risk of poor health and developmental outcomes (Rosen et al., 2008). Pregnant adolescents have also been defined as a vulnerable group (Caine et al., 2012) due to their developmental needs, financial dependency, and difficulty in further completing their education (Pilon, 2011). Piper and Parks (1996)

have suggested the distribution of free infant formula vouchers to low-income women provides negative reinforcement for breastfeeding. The local hospital in Windsor provides free bottles for formula to those who request it, even with no medical indication, while admitted in the hospital. The WHO's stance on formula feeding is clear under their Ten Steps to Successful Breastfeeding report (WHO, 1998). Research has shown supplementing with formula, without a medical indication, is associated with an increased risk of breastfeeding cessation (WHO, 1998). Women have also complained of not being able to reach educational resources through the telephone when enquiring about class information (Tighe, 2010).

It is also worth noting that those who experience social isolation, financial difficulties, housing issues, or domestic violence may not have the time or energy to seek the community resources needed in registering for prenatal classes (Tighe, 2010). Furthermore, women pregnant with multiples may not list breastfeeding as a priority as these women often experience high risks that may include prolonged bed rest or repeated hospitalizations which would interfere with class attendance (Montgomery et al., 2005). Transportation, limited time availability, and childcare issues are frequent barriers minority and low-income women face when attempting to partake in prenatal education especially because prenatal classes are normally offered on evenings and weekends, when transportation runs less frequently, costs may be higher and childcare may be difficult to obtain (Berman, 2006). Tighe (2010) identified the issues of transportation and childcare issues as prenatal education barriers, but also identified the barriers of shift work with inflexible employers, unsuitable class times, no interest, mothers believing they already know enough, and partners not wanting to attend.

Some studies address the importance of including partners in prenatal breastfeeding education, as they can potentially have a positive or negative impact on the initiation and sustainment of breastfeeding (Powell & Baic, 2011; Sherrif & Hall, 2011). Powell and Baic (2011) identified a gap in the literature in addressing partners' knowledge, attitudes, and views on breastfeeding. Sherrif and Hall (2011) also identified partners wanting more information on the practicalities of breastfeeding to support their partner. Those that attended prenatal classes reported that the increased knowledge confirmed that breastfeeding is the preferred method of infant feeding, however some reported conflicts with work limited their class attendance (Sherrif & Hall, 2011).

Due to the low percentage of women attending prenatal classes in Windsor-Essex County, the WECHU completed a Prenatal Education Needs Assessment (2012). Out of the 127 women surveyed in the community, 7.8% of women attended prenatal class with their current pregnancy and 19.8% of women attended prenatal class with their previous pregnancy (WECHU, 2012). These numbers are still lower than the provincial class attendance rate of 25% (Best Start Resource Centre, 2014a). These numbers highlight the need for exploring alternate modes of breastfeeding education that overcome the barriers experienced by those affected by determinants of health in order to positively influence women's breastfeeding choices.

Primipara vs. Multipara Breastfeeding

Along with exploring how the determinants of health influences breastfeeding, the relationship between parity, breastfeeding, and breastfeeding education can be further examined. A number of studies have previously highlighted higher breastfeeding rates in multiparous women, as opposed to primiparous women, however the needs of

multiparous women warrant consideration (Demirtas, 2015). In Ontario, there is a small difference in percentages of breastfeeding exclusivity in women who have only one child (62.7%) and multiple children (61.4%) at hospital discharge (Best Start Resource Centre, 2015). All women should be educated on breastfeeding and provided support, however multiparous women argue that they are not provided with breastfeeding education and assistance because of their previous breastfeeding experiences (Demirtas, 2015). A study by Demirtas (2015), determined that multiparous women felt misunderstood by their nurses when they experienced breastfeeding problems within the hospital. This study also highlighted the need for prenatal breastfeeding education for multiparous women to compensate them for the disadvantages of their short hospital stays (Demirtas, 2015). Primiparas and multiparas with longer hospital stays have been shown to have longer durations of breastfeeding exclusivity, however multiparas are at an increased risk for early discharge when compared against primiparous women (Ekstrom, Widstrom, & Nissen, 2003).

Previous breastfeeding experience has been found to be more significant in determining subsequent breastfeeding behaviours than multiparity alone (Li Bai, Yee Tak Fong, & Tarrant, 2015). Women who have had success in breastfeeding previous children are more likely to experience success in breastfeeding subsequent children (Amatayakul, 1999). However, greater support for multiparous women with no breastfeeding experience or previous short breastfeeding durations should be considered, as these women are at a significantly higher risk of weaning (Li Bai, et al., 2015). Li Bai et al. (2015) suggest obtaining a detailed breastfeeding history from multiparous women, as well as their perceptions of previous breastfeeding experience, to determine who may

require additional prenatal and postnatal support to prolong their length of breastfeeding to the WHO's recommended timeframe.

Conceptual Framework

The Canadian Council on Social Determinants of Health (CCSDH) labeled the Main Determinants of Health Model (MDHM) by Dahlgren and Whitehead (1991) as the most widely known and universally used model among all determinants of health frameworks (CCSDH, 2015). The MDHM was used to guide this study due to the previously identified barriers women face in accessing prenatal education (Dahlgren & Whitehead, 1991). A number of determinants of health have been found to influence health rates, prenatal class attendance rates, breastfeeding initiation rates, and breastfeeding duration rates (Best Start Resource Centre, 2014a; Best Start Resource Centre, 2014b; WECHU, 2012). The MDHM has also been referred to as a Social Model of Health, the Dahlgren-Whitehead Rainbow, the Health Determinants Model, and a Model of the Determinants of Health among literature, and is now more commonly known as the Rainbow Model among the public health nurses at WECHU (Jinks, Ong, & O'Neill, 2010; Public Health Action Support Team [PHAST], 2011). The CCSDH (2015) outlines how the MDHM exemplifies how the determinants of health influences an individual's health and well being beginning at structural factors, such as socio-economic, cultural, and environmental conditions, and extending to fixed factors individuals have little control over. The MDHM identifies the importance of taking an upstream approach by promoting healthy communities as the health of a community shapes the health of individuals (CCSDH, 2015; Mason, 2014). It is commonly used in

public health to explore the influences the determinants of health have on health outcomes (PHAST, 2011).

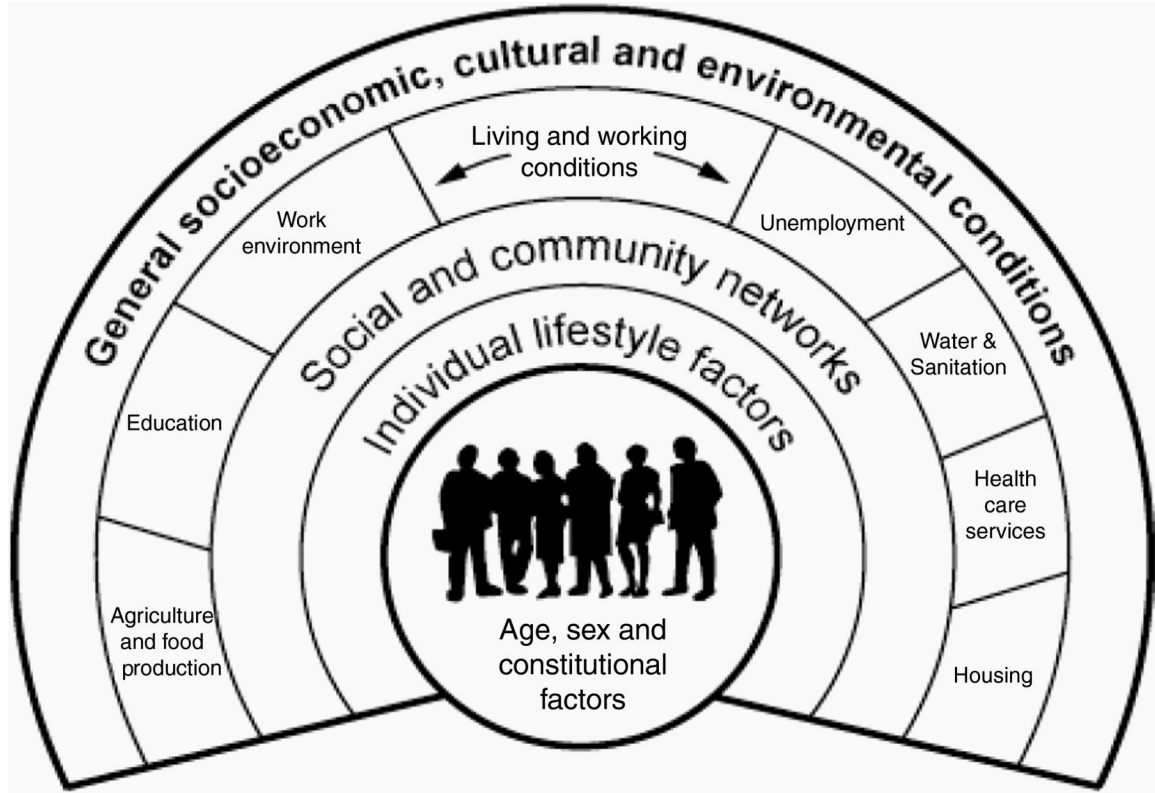
The MDHM consists of four layers of health influence that need to be kept in mind when developing policies and strategies for all types of intervention (Dahlgren & Whitehead, 1991). Dahlgren and Whitehead (1991) suggest creating strategies in an attempt to influence all levels of their model for a more effective change. The MDHM was used to identify strategies in minimizing the impact some of the determinants of health have on individuals accessing prenatal breastfeeding education.

The outermost layer requires political action at national or international levels to create structural changes in socio-economic, cultural, and environmental conditions (Dahlgren & Whitehead, 1991). The idea of introducing prenatal breastfeeding education is a socio-economic strategy proposed to address health promotion and primary prevention of illnesses, as breastfeeding has proven benefits to women and their newborns. There is also a cost-benefit to women and the economy when breastfeeding is chosen. The cultural aspect of the outermost layer is addressed by offering the breastfeeding videos in seven languages and the reading materials in eighteen languages. Increasing awareness to the topics of breastfeeding will also create a culture where breastfeeding discussions are a norm. The second layer aims to improve living and working conditions by promoting healthy public strategies and business strategies (Dahlgren & Whitehead, 1991). This layer is addressed by providing equal access to breastfeeding education to all pregnant women, regardless of level of income or socio-economic status. Providing education where they obtain health care services, within obstetricians' offices, limits barriers women may face in accessing breastfeeding

resources. Women may also perceive greater breastfeeding support from their obstetricians if breastfeeding educational materials are made available within their offices. The third layer involves strengthening social and community support available to individuals to aid in their defense against health hazards by strengthening volunteer organizations and communities (Dahlgren & Whitehead, 1991). Providing breastfeeding education materials to women can strengthen their social and community support by giving women the ability to share their resources with family, friends, neighbours, and members of their community to increase their perceived level of support. Individual and lifestyle factors, the fourth layer, involve influencing individual lifestyles and attitudes through health education (Dahlgren & Whitehead, 1991). Promoting breastfeeding education may influence a woman's choice to breastfeed and increase positive breastfeeding attitudes. The core of the model consists of fixed factors individuals have little control over, i.e. age, sex, and genetic make-up (Dahlgren & Whitehead, 1991).

Introducing prenatal breastfeeding education in the obstetrician's waiting room is an innovative concept that can influence individual lifestyle factors, such as breastfeeding knowledge, attitudes, and rates, by providing breastfeeding information and by limiting barriers people may face from social determinants of health. This study is a start in strengthening community support for prenatal women by providing cost-free breastfeeding education through a health care service they are already utilizing. Cultural sensitivities are also considered by ensuring a variety of languages are available through the reading materials and videos.

Figure 1. The Main Determinants of Health Model



(Dahlgren & Whitehead, 1991)

Summary and Gaps in Literature

Thus far, a review of the prenatal education resources in Windsor-Essex County determined that there is no other approach to prenatal breastfeeding education within the community besides prenatal group classes, prenatal individual classes, and support groups. This is concerning because while prenatal classes and support groups for breastfeeding are available at a variety of community-based resources, there has been no investigations as to why Windsorites are not attending or how they prefer to be supported. Literature has identified barriers to obtaining prenatal education due to financial restraints, time restraints, scheduling difficulties, limited social support, and transportation difficulties (Risica & Phipps, 2006; Tighe, 2010). Huang et al. (2007) and Dusdieker et al. (2006) found that breastfeeding education provided in the third trimester

increased breastfeeding initiation rates and duration. It would stand to reason that introducing prenatal breastfeeding information in obstetricians' offices during prenatal appointments in the third trimester bears some consideration to improve breastfeeding initiation in mothers as women are required to attend these appointments weekly.

Strong breastfeeding promotion has been associated more with nurse midwives (63.6%) as opposed to family practitioners (13.2%) and obstetricians (7.3%) (Dusdieker et al., 2006). Nurse midwives have been found to provide visually supportive breastfeeding materials in the office setting at a higher rate than family practitioners and obstetricians (Dusdieker et al., 2006). A report by Dusdieker et al. (2006) found obstetricians are more likely to contain formula feeding pamphlets, breast-feeding pamphlets from formula companies, free formula coupons, and items with formula advertisements than nurse midwives and family practitioners. Breastfeeding videos, breastfeeding booklets, and pro-breastfeeding displays were found more often in nurse midwife offices compared to family practitioner and obstetrician offices (Dusdieker et al., 2006). Besides prenatal classes, alternate modes for delivering prenatal breastfeeding education such as education via printed materials (Risica & Phipps, 2006; Tighe, 2010), smartphone applications (Bert et al., 2014), and videos need to be explored and tested (Risica & Phipps, 2006, Tighe 2010). These options in prenatal education can provide an opportunity for breastfeeding promotion in obstetricians' waiting rooms where such opportunities are underutilized (Dusdieker et al., 2006). Providing cost-free breastfeeding education in the obstetricians' waiting rooms may alleviate some barriers women are faced with in accessing prenatal education due to the determinants of health,

such as time constraints, financial constraints, scheduling conflicts, and transportation difficulties.

Research Questions and Hypotheses

The research questions and hypotheses derived from the preceding literature review were as follows:

Research Question 1: Does breastfeeding education in the obstetrician's waiting room impact exclusive breastfeeding rates upon hospital discharge?

Hypothesis 1: Breastfeeding education in the obstetrician's waiting room will increase breastfeeding rates upon hospital discharge.

Research Question 2: Is there a decline in breastfeeding rates with study participants from hospital discharge to six weeks postpartum?

Hypothesis 2: There will be no decline in breastfeeding rates from hospital discharge to six weeks postpartum.

Research Question 3: Does breastfeeding education in the obstetrician's waiting room impact women's intent to exclusively breastfeed?

Hypothesis 3: Breastfeeding education in the obstetrician's waiting room will increase women's intent to exclusively breastfeed.

Research Question 4: Does breastfeeding education in the obstetrician's waiting room impact women's breastfeeding attitudes?

Hypothesis 4: Breastfeeding education in the obstetrician's waiting room will increase women's breastfeeding attitude scores.

Research Question 5: Does breastfeeding education in the obstetrician's waiting room impact women's breastfeeding knowledge?

Hypothesis 5: Breastfeeding education in the obstetrician's waiting room will increase women's breastfeeding knowledge scores.

Research Question 6: How do the previously identified determinants of health in the literature review, such as those who are unmarried, under 20 years of age, below the poverty income line, have less than a high school education, immigrants, and minorities, relate to breastfeeding rates in Windsor-Essex County?

Hypothesis 6: Those who are unmarried, under 20 years of age, below the poverty income line, have less than a high school education, immigrants, and minorities will have lower breastfeeding rates compared to the rest of the study population.

Research Question 7: What are the patients' preferred mode of breastfeeding education between a health education video, smartphone applications, and an informational booklet introduced in the obstetrician's waiting room?

Hypothesis 7: There is currently no evidence to support which mode of breastfeeding education is supported within the literature at this time; therefore there is no hypothesis for this research question.

CHAPTER III

DESIGN AND METHODOLOGY

Research Design

This descriptive, longitudinal pilot study used a quasi-experimental pretest-posttest survey design. Descriptive statistics were used to describe the characteristics of the sample population (Bannon, 2013). Data collection occurred at different points in time defining this study as longitudinal (Creswell, 2009). This was a pilot study as the literature review found no comparable study that introduced prenatal education in an obstetrician's waiting room that could be replicated or used for methodological guidance. This pilot study explored the feasibility of applying this methodology to larger studies. Individuals were not randomly chosen to join the study, therefore making this a quasi-experimental study (Creswell, 2009). A convenience sample was used for selecting participants (Creswell, 2009). A pretest-posttest design assisted the researcher in determining if the independent variable, breastfeeding education, had an impact on the dependent variables, breastfeeding exclusively at hospital discharge, breastfeeding exclusively at six weeks postpartum, breastfeeding attitudes, and breastfeeding knowledge (Knapp, 1998). A survey design was used to provide quantitative measurements and an operational definition of study participants' demographic data, breastfeeding knowledge, attitudes, and behaviour. This design was chosen because of the ability to generalize findings from a study sample to make suggestions for a population and because of the possibility of high turnaround in data collection (Creswell, 2009).

Huang et al. (2007) found providing breastfeeding education during the third trimester of pregnancy increased breastfeeding rates and duration. Following Huang's recommendation, prenatal breastfeeding education was provided to women in their third trimester with three phases of survey collection. The first phase was completed prior to the breastfeeding education being introduced in the form of a pre-intervention survey. This survey was distributed to interested participants in their third trimester of pregnancy after their consent to participate was obtained. Once the pre-intervention survey was completed, the three different forms of breastfeeding education materials, such as reading materials, smartphone applications, and videos, were provided. Participants were given the option to complete all three modes during their office appointment or were provided with the resources to review them at home. Once the participants completed all three modes they entered phase two of the study. They were provided with a post-intervention survey in paper format and were given the option to complete it either after their appointment in the office, at home within the week by taking the survey home with them, or at their next obstetrician's appointment scheduled for the next week. Many women who choose to stop breastfeeding do so in the early postpartum period, often between weeks one and four postpartum (Lewallen, 2006), therefore phase three consisted of post-test surveys distributed at the participants' six-week postpartum appointments in the obstetricians' offices to determine exclusive breastfeeding rates.

Questionnaire Selection and Adaptation

Demographics and breastfeeding background information were obtained through a survey (Appendix B). Literature has shown a negative relationship between certain demographic characteristics and breastfeeding rates, such as: unmarried, age under 20,

income below poverty line, less than a high school education, immigrants, and minorities (Locally Driven Collaborative Project Breastfeeding Surveillance Project Team, 2013; Best Start Resource Centre, 2014a). Background information obtained through the surveys included the following: available support systems, planned exclusively breastfeeding, planned combination feeding, previous breastfeeding experience, and previous prenatal class attendance.

Gau (2004) found a negative relationship between breastfeeding and women with unsupportive surroundings, such as familial and health care professionals. Chezem, Friesen, and Boettcher (2003) determined women who initially intended to combination feed and introduced formula had shorter breastfeeding durations than those who planned to exclusively breastfeed. Stuebe and Bonuck (2011) discussed multiparous women who previously had positive breastfeeding experiences with prior children as being inclined to breastfeed again.

The postpartum survey included: breastfeeding initiation at hospital, formula initiation at hospital, supportive breastfeeding assistance in hospital, exclusively breastfeeding at hospital discharge, supportive breastfeeding assistance in community, formula initiation at home, exclusively breastfeeding by six week postpartum appointment, and combination feeding by six week postpartum appointment (Appendix C). Challenges met while initiating breastfeeding were documented, such as: difficulties latching, low milk supply, nipple/breast pain, maternal illness, and newborn illness (Locally Driven Collaborative Project Breastfeeding Surveillance Project Team, 2013). The final section of the postpartum survey included what the preferred method of

prenatal education was and if they would recommend introducing breastfeeding education throughout all obstetricians' offices.

Several studies have been conducted measuring the attitudes and knowledge of breastfeeding among health care professionals, (Freed et al., 1995a; Duckett et al., 1998; Dungy, McInnes, Tappin, Wallis, & Oprescu, 2007) however there was difficulty in obtaining tools that measured a mother's breastfeeding attitude and breastfeeding knowledge after the introduction of an educational intervention. E-mails were sent out to obtain reliable surveys comparable to this research study and either the author had Chinese only versions of the tools or the author who held the only copy of the tools had passed away. One English written study by Kempenaar and Darwent (2013) was found to examine the attitudes and knowledge of prenatal and postpartum women prior to and following a breastfeeding education intervention by adapting survey tools originally developed by Scott, McInnes, and Tappin (2003).

The original surveys developed by Scott et al. (2003) consisted of tools that measured breastfeeding related attitudes, knowledge, and management practices of health care professionals who supported women. They had incorporated attitude items from a well-known valid and reliable questionnaire used frequently for breastfeeding research known as the Iowa Infant Feeding Attitude Scale (De La More et al., 1999). Scott et al. (2003) measured the reliability and validity of their questionnaire using a sample of 189 midwives in Scotland. They obtained a Cronbach's alpha of .85 for their 33-item attitude scale and .69 for their 26-item knowledge scale (Scott et al., 2003). Kempenaar and Darwent (2013) adapted the breastfeeding attitude tool and breastfeeding knowledge tool by Scott et al. (2003) to better suit their research study. They altered any items that were

worded for health care professionals and modified them to be more easily read by mothers (Kempenaar & Darwent, 2013). Any items that were better suited for health care professionals and not appropriate for mothers were deleted (Kempenaar & Darwent, 2013). Kempenaar and Darwent (2013) ensured all remaining questions were current and evidence-based (Appendix D). Permission to use these survey instruments was obtained (Appendix E).

Description of Educational Materials

Three modes of breastfeeding education were used: video, booklet, and smartphone applications. Three different types of resources were readily available so that the information provided was more conducive to adult learning styles. Brady (2013) discussed the importance of establishing optimal learning environments for adults. Facilitators to learning were identified as providing enough information and limiting time constraints or scheduling conflicts (Brady, 2013).

Brady (2013) acknowledged common adult learning styles, such as, visual, auditory, and verbal learners (Brady, 2013). The Region of Peel breastfeeding instructional videos, When You Need It: Breastfeeding Information (WYNI) smartphone application, Mom and Baby To Be (M+B 2B) smartphone application, and Breastfeeding Matters booklet were the chosen resources to be used as they gave the study participants the options of learning through visual images/pictures, sounds, and written words. They are all recognized as credible resources and are used by health care professionals within Windsor-Essex County.

The Region of Peel breastfeeding instructional videos were used as visual and auditory learning aids to the importance of breastfeeding. Topics within these videos

include initiating breastfeeding, the importance of skin-to-skin contact, obtaining a proper latch, the different breastfeeding positions, milk production and supply/demand concept, answers to commonly asked questions, and breastfeeding tips after a cesarean section (Peel Public Health, 2016). These videos are available in a variety of languages: English, French, Mandarin, Punjabi, Spanish, Urdu, and Vietnamese (Peel Public Health, 2016).

The smartphone applications provided a learning opportunity for visual and verbal adult learners. The WYNI is an interactive phone application that reviews the importance of breastfeeding, an introduction to breastfeeding, storing breast milk, troubleshooting breastfeeding problems, and when and where to get help (WECHU, 2015). This phone application is available for Apple and Android products (WECHU, 2015). M+B 2B is a phone application available for Apple products containing preconception, prenatal, and postpartum education (Niagara Region, n.d.). The breastfeeding education provided through this phone application includes initiating breastfeeding, breastfeeding positions, milk supply, supplementation, pumping, and family/friend support (Niagara Region, n.d.).

The Breastfeeding Matters booklet is a reading resource, for visual and verbal learners, which was distributed out of Windsor Regional Hospital in the postpartum period up until the spring of 2017. The production of this booklet is funded by the Government of Ontario, meets the Baby-Friendly Initiative standards, and has been approved as a breastfeeding resource by the Baby-Friendly Initiative Ontario (Health Nexus, 2014). This booklet is available in a variety of languages: English, French, Arabic, Bengali, Chinese (simplified), Farsi, Gujarati, Hindi, Korean, Punjabi, Russian, Serbian, Somali, Spanish, Tamil, Tagalog, Urdu, and Vietnamese (Health Nexus, 2014).

It reviews the importance of breastfeeding, tips on initiating and maintaining breastfeeding, how to store breast milk, and frequently asked questions (Health Nexus, 2014).

Providing these cost-free breastfeeding education options in the obstetrician's office eliminated barriers some may face in obtaining breastfeeding education themselves due to the Social Determinants of Health such as: low income, low education, unemployment, immigrant status, and minority status.

Research Setting

This study was conducted in Windsor-Essex County, which has a population of 319, 246 (Statistics Canada, 2011). The last documented total number of births within Windsor-Essex County reported by the BORN database was 3, 905 (Better Outcome Registry and Network, 2013). Obstetricians' offices were the primary setting of this study. A literature review has shown a gap between the promotion and support of breastfeeding between obstetricians compared to midwives (Dusdieker et al., 2006). Two separate obstetrician offices, with a total of four obstetricians, in Windsor-Essex County were chosen for the setting of this study due to the fact that they have the adequate resources and space. Each office was chosen based on the availability of space to hold the study within their waiting rooms and the availability of a private room for volunteer research assistants to recruit in. These obstetricians were capable of playing videos within their offices and approved the implementation of breastfeeding education and data collection within their offices. Letters of permission allowing research to take place on site were obtained from each obstetrician (Appendix F).

Obstetricians and Research Assistants

Each obstetrician claimed booking sixty to one hundred obstetrical patients a week with approximately a third to almost all of those patients in their third trimester during the planning phase of this study. Dr. Victory is an obstetrical physician who also specializes in reproductive endocrinology and infertility. Dr. Polsky, Dr. Chan, and Dr. Brkovich, work in the same office at the South Windsor Women's Health Clinic. Dr. Polsky is the Chief of Obstetrics at Windsor Regional Hospital. Dr. Chan recently joined the obstetrical services of Windsor Regional Hospital, from Leamington District Memorial Hospital. A number of her previous patient population followed her from rural Leamington to urban Windsor, however her total number of obstetrical patients she cares for monthly is lower than the other obstetricians and is continuing to build. Dr. Brkovich had a large obstetrical patient population in January of 2017, however made the decision to focus more of her care in gynecology services, so most of her patients had already delivered before this study rolled out in February of 2017.

The research assistants were third year nursing students who were volunteering their time to assist in the study to gain research experience. Each student had an obstetrical clinical placement at Windsor Regional Hospital and each was considered a top performer in the clinical setting within her group. Within their clinical setting, they were tested on their breastfeeding knowledge and utilized their expertise in breastfeeding when educating moms on the unit on breastfeeding topics. They were provided an orientation to the educational breastfeeding materials used within the study and had phone access to the primary researcher the first few weeks the study was implemented into the offices to resolve any confusion or questions that arose.

Sample

In order to participate in this study, the following inclusion criteria by the Breastfeeding Surveillance in Ontario project was adapted slightly in order to provide guidance for this study (Locally Driven Collaborative Project Breastfeeding Surveillance Project Team, 2013). Inclusion criteria consisted of: all mothers over the age of 16, planning to give birth in hospital during set time period, consent to participation, custody of baby, ability to read in English or interpreter available when completing consent and surveys, newborn discharged home with mother, minimum of 37 weeks gestation at delivery, birth weight of at least 2500g, live birth, and postpartum survey completed by the end of the week following six week postpartum follow up appointment (Locally Driven Collaborative Project Breastfeeding Surveillance Project Team, 2013). The Breastfeeding Surveillance in Ontario project included only women over 18, however for the purpose of this research study the age inclusion was extended to 16 years of age due to literature stating a high-risk group for not breastfeeding are those under 20 years of age. Exclusion criteria consisted of: mothers who did not provide consent to research, inability to understand the letter of information provided and study outcome, did not read in English or interpreter unavailable, life threatening illness for mother and/or newborn, newborn death, and not the primary caregiver of infant (Locally Driven Collaborative Project Breastfeeding Surveillance Project Team, 2013).

Overall, the study sample of 121 participants contained women aged 18-45 years old, with a mean age of 30.33 years. The majority of participants were married ($n = 85$), while the rest reported either being single, in an exclusive relationship, in a common law relationship, or separated ($n = 36$). While 22 participants reported their yearly income as

below the poverty line (\$40,000), the majority of participants ($n = 90$) reported their yearly household income as above the poverty line; 38 made \$40,000-79,999; 24 made \$80,000-119,999; and 28 made \$120,000 to over \$160,000. Most participants indicated being employed full time ($n = 62$), whereas the remaining participants ($n = 58$) were employed part time, students, unemployed, or on temporary illness or disability. There were 27 participants that reported having up to a grade school or high school education. The majority of participants had higher than a high school education ($n = 89$) and indicated obtaining one of the following: registered apprenticeship, trades certificate, diploma, college diploma, college certificate, university certificate, university diploma, university degree, postgraduate degree, or doctorate. There were 99 participants who reported they were born in Canada, while 21 identified being born outside of Canada. There were a small number of participants who identified themselves as landed immigrants to Canada ($n = 16$) and who self-identified to a minority group within Canada ($n = 29$). There were 59 participants who identified themselves as primiparas, and 59 participants who identified themselves as multiparas. Out of the multiparas, 49 previously breastfed their other children, 3 chose to formula feed their other children, and 7 attempted to breastfeed, however ended up formula feeding their children.

Along with demographics, the phase 1 questionnaire also collected data on participants' perceived support systems and their previous breastfeeding education attained. Most women reported feeling supported by their family ($n = 98$), followed by their friends ($n = 83$), then their significant other ($n = 70$), and the last category was under an "other" option ($n = 16$). Interestingly, the majority of women reported obtaining previous breastfeeding education from their peers or friends ($n = 63$), followed by their

professionals ($n = 39$) and lactation consultants ($n = 38$), then by the “other” category ($n = 31$), next prenatal classes ($n = 26$), and lastly doulas ($n = 4$).

Procedure

Research approval was obtained from the Research Ethics Board of the University of Windsor prior to beginning the study. An initial informational letter explaining the research study, including consent to participate, was distributed to potential participants during phase one of the study (Appendix G). Letters of information to address continued consent to participate in the research study was distributed during phases two and three of the study (Appendix H). Completion of the phase two and three surveys implied continued consent from the participants. Participation in the study was voluntary, participants were given the option to withdraw from the study at any point in time without consequence, and participants who chose to provide e-mail addresses were entered in a draw for a Babies ‘R’ Us gift card to compensate them for their time in participation. Participants were provided with the Telehealth Ontario resource in their phase three survey package to address any risk (Appendix I). Confidentiality of participants was maintained by asking participants to create their own identification codes due to the risk of the principal investigator identifying them when caring for them in the postpartum period. The principal investigator works as a staff nurse in the local maternal newborn unit. To maintain confidentiality, research assistants were used to ensure all surveys contained identification codes and to ensure there was no personal identifying data written on the surveys prior to the principal investigator viewing them. If a participant decided to contact the principle investigator with questions in regards to the study, she was made aware through the consent letter that it would be her decision to

disclose any of her information when she called or e-mailed the principle investigator. If participants were not eligible to take part in the study, however were interested in breastfeeding education, the research assistants provided them with an information sheet instructing them on how to access the same educational breastfeeding materials at home (Appendix J).

Recruitment and Data Collection

The study was advertised at the offices by office staff and through visual posters in the reception area (Appendix K). Both obstetrical waiting areas were free of clutter and contained no educational materials focused on breastfeeding education during the time of this study. Along with details of the research study, the flyer also notified potential participants of the chance to win up to \$75 in Babies 'R' Us gift cards for those who participated in all three phases of the study. Four gift cards valued at \$25 each were drawn from the participants after each phase was completed. Participants were notified through their consent letter that even if their survey was excluded from the data analysis portion of the study due to certain circumstances that warranted doing so, they were still entered into the gift card draws to compensate them for their time. The consent letter also explained that winners were notified via e-mail by the research assistants and had one week to respond with an address to send the gift cards to. Only the winners were contacted and if the research assistants did not receive a reply within the week another winner was chosen.

Consent to participate in the study was obtained by research assistants when participants signed an informative consent letter with the researcher's contact information attached. The research assistants were provided with a script to follow during the

recruitment stage to limit any confusion (Appendix L). Once consent was obtained, the research assistants reviewed the three phases of data collection with the participants. The first phase began when the participants were given the pre-intervention survey in paper format and the secretarial staff was notified to highlight their names within the office's electronic charting system as research participants. After completion of the pre-intervention survey, the research assistants provided the three different modes of breastfeeding resources. Participants chose to complete the breastfeeding resources while waiting for their obstetrician's appointment or were given the information on how to access these resources at home. They were given until their next obstetrician appointment (in a weeks time) to complete the breastfeeding educational tools. Phase two began at their next prenatal appointment. The office staff recognized their highlighted names within their electronic charting system as research participants, prompted them to complete the post-intervention survey, and reminded them of the six-week postpartum survey. The office staff was provided with a script to follow while handing out the surveys to direct their dialogue with the participants (Appendix M). Phase three commenced at their six-week postpartum appointment in the obstetricians' offices. The staff was prompted by the participants' highlighted names to hand them their postpartum survey. The participants were given the option to complete all surveys during their obstetrician visit and to submit them in the locked boxes within the waiting rooms, complete them at home and submit them into the locked boxes at their next visit, or complete them at home and mail them in to the University of Windsor. All surveys were in a preaddressed, stamped envelope in the event a participant decided to mail them in at their convenience.

Data Analysis

The independent variable was the breastfeeding education materials, which was categorical (Creswell, 2009). The dependent variables (categorical and continuous) were breastfeeding exclusively at hospital discharge, breastfeeding exclusively at six weeks postpartum, breastfeeding attitudes, and breastfeeding knowledge (Creswell, 2009). Covariate variables identified through literature were breastfeeding intention (categorical), demographics (categorical and continuous), prenatal class attendance (categorical), breastfeeding experience (categorical), and breastfeeding support systems (categorical).

The data analysis portion of this study consisted of chi-square tests, percentages, and linear mixed models. To test for the categorical variables of breastfeeding education and exclusive breastfeeding at hospital discharge in the first research question, chi-square testing was used to compare this study's data to previously obtained statistics from the BORN database (Polit, 2010). The BORN database only collects data on breastfeeding initiation and breastfeeding on hospital discharge, so percentages were used to test the second research question to compare the difference in rates between breastfeeding at hospital discharge to six weeks postpartum (Polit, 2010). Chi-square testing was used again for the third research question to analyze the impact breastfeeding education had on intent to breastfeed (Polit, 2010). Paired sample t-tests were originally proposed to analyze the fourth and fifth research questions in order to compare attitude and knowledge scores before and after the breastfeeding education (Polit, 2010). The preferred mode of breastfeeding education between patients was compared in percentages.

An effect size of .20 is considered small according to Cohen's criteria for t-tests, whereas .50 is considered medium. A population effect size of .25 was used in order to be conservative, however clinically relevant. There was only one comparable study found by Huang et al. (2006) where a prenatal breastfeeding education program was introduced and had an effect size of .25. Therefore, an effect size of .25 was assumed for this study's t-test analysis based on the comparable study by Huang et al. (2006) and to ensure clinical relevance. After inputting this data into G*Power software, it was determined a sample size of 101 was needed for the t-test portions of this study. In order to determine the needed sample size for Chi-Square analyses with one degree of freedom, Bannon (2013) suggested using a medium effect size of .30. A sample size of 88 participants was needed for Chi-Square analyses in this study according to the G*Power software. Therefore, the needed total sample size was 101 participants.

Strategies in attempt to avoid the problem of missing data were to provide flexibility as to when participants could join the research study in their third trimester. They were also be given the options to complete the educational materials and surveys before their appointments, after their appointments, or at home. Approaches taken to address missing data depended on the extent of missing data, pattern of missing data, nature of missing data, role of the variable, and level of measurement of the variable (Polit, 2010).

Due to the high attrition rate within the longitudinal data sets and amount of missing cases, paired t-tests were deemed as unsuitable to use and linear mixed model testing was preferred (Pietrzak, Fredrickson, Snyder, & Maruff, 2010). There was a sample size of 13 participants who had completed phase 3 of the research, and no post

hoc power analysis done for linear mixed model testing as calculating power after the study is completed is advised against (Verhagen et al., 2014). Instead, confidence intervals were reported as they provided insight to the study's power by identifying the ranges of probable true values (Verhagen et al., 2014). Confidence intervals are an accurate consideration of the associated strengths observed within the study (Verhagen et al., 2014).

CHAPTER IV

RESULTS

With the help of research assistants volunteering their time in the obstetricians' offices, a total number of 135 consent letters to participate in this research study were obtained. There were 121 questionnaires retained during the first phase of the study, providing a 90% response rate. Unfortunately, after six months of data collection, 44 questionnaires were obtained for the second phase and 13 for the third, indicating a 36% retention for phase 2 and 11% for phase 3.

Table 1.

Total Number of Completed Surveys for Each Phase			
	Phase 1	Phase 2	Phase 3
Total Number of Completed Surveys	121	44	13

Data Screening and Cleaning

The data collected from all three surveys were entered into the Statistical Package for the Social Sciences (SPSS), version 24. Ten percent of the survey cases were reviewed in SPSS at random to check for data entry errors (Bannon, 2013). They were also reviewed for violations in logic, such as if the participants answered themselves as not having breastfeeding experience, it would be logical to see the second part of that question blank as the length of time breastfeeding would not be applicable for them (Bannon, 2013). All variables were examined for inappropriate and invalid responses by running frequency procedures (Bannon, 2013).

If the demographic question regarding the highest level of education received had two answers checked off, it was recoded as missing data. In general, if a question

required one correct answer and the participant checked off more than one box, it was also recoded as missing data. There was also confusion in Section B's "check all that apply" section, particularly questions 20-23 (see pages 105-106). Participants who checked off a few answers, along with the "unsure/don't know" box, were recoded as missing data. It was impossible to determine which responses the participants meant to check off, so these responses were recoded as missing data in order to maintain data fidelity (Bannon, 2013). Personal experience breastfeeding other children was reported in number of days, weeks or months. For the purpose of statistical analysis and consistency, all answers were converted into weeks. If the participants identified breastfeeding more than one child, the average weeks of breastfeeding between all children were used. The short answer questions in Section B surrounding the topics of how long a mother should breastfeed exclusively and when to introduce solid foods, were converted to months in order to maintain consistency throughout the data. In the postpartum data set, the infants' weights were converted from pounds and ounces to grams using The Calculator Site (Hazell, 2017). There were also some questions that should have had a "none" or "not applicable option" but did not. There is no way to tell if the missing data is due to a "none/not applicable" option not being available within the surveys.

There were questions in sections A and B of all three surveys that were negatively phrased towards breastfeeding and therefore needed to be reverse coded through SPSS (Bannon, 2013). The variables that were reverse coded were then reviewed for accuracy through frequency procedures (Bannon, 2013). There were questions in section B that were recoded in order to sum the totals of breastfeeding attitudes and breastfeeding

knowledge the same way as the original authors. All correct answers were given a value of one, while all missing values within this section were given a value of zero.

Missing Data

The complete dataset was screened for missing data. Little's MCAR test was used to evaluate the pattern of missingness (Schlomer, Bauman, & Card, 2010). The data is considered missing completely at random (MCAR) if the p values for this test are not significant (Schlomer et al., 2010). The demographic variables were determined to be MCAR ($\chi^2 = 10.645, p = .100$). The patterns of missingness were also determined to be MCAR for the mean attitudes scores between phases 1 and 2 ($\chi^2 = 1.842, p = .175$); the mean knowledge scores between phases 1 and 2 ($\chi^2 = 2.503, p = .286$); and the total mean attitudes with knowledge scores between phases 1 and 2 ($\chi^2 = 2.253, p = .133$).

An acceptable rate of missingness for longitudinal research varies from 5% to 20%, however 10% is the standard consensus among most researchers (Roberts, Sullivan, & Winchester, 2017). The amount of missingness for each variable was calculated through frequencies. All variables that assessed breastfeeding attitudes and knowledge scores for phases 1 and 2 had less than 5% missingness, except for three. The three variables with greater than 5% missingness were in the knowledge sections of phases 1 and 2. Because all three had less than 10% missingness, the variables remained in the study for analysis. There was one participant that submitted greater than 20% of their survey blank; therefore this case was deleted from the study. There were two variables completely excluded from statistical analysis because of greater than 20% of the data missing due to the study's design: the dates the surveys were completed and the dates the educational materials were completed.

There were three phase 2 and three phase 3 surveys that were unusable because they were not attached to a participant identification code. There was also one survey that was submitted and all sections were left blank. Therefore, in total, there were six surveys that were received; yet excluded from the study.

Normality and Outliers

The continuous data, such as age, breastfeeding attitudes, and breastfeeding knowledge, were examined for normality by visualizing normal shaped curves on the histograms (Bannon, 2013). Due to the small sample size of this study, the Shapiro-Wilk test was reviewed for significance over the Kolmogorov-Smirnov test (Bannon, 2013). The Shapiro-Wilk test deemed breastfeeding attitudes and knowledge scores to be not statistically significant for non-normal distributions, however age required further testing due to a significantly non-normal result. Age was further examined by dividing the skewness and kurtosis statistics by the standard errors (Kim, 2013). The skewness and kurtosis Z scores for age were within +/- 1.96, therefore confirming age as a normal distribution (Kim, 2013). An exploration of possible outliers within these three variables were examined through z-score analysis which resulted in no outlier scores; this was further validated through the review of boxplots.

Reliability and Validity

The original Infant Feeding Questionnaire by Scott et al. (2003) embedded some of the attitude items from the Iowa Infant Feeding Attitude Scale, which had been previously tested for validity and reliability. Validity for the additional content Scott et al. (2003) added to their attitude portion of their questionnaire was tested through a breastfeeding expert panel, which consisted of nursing, midwifery, and medical

professionals. They tested for the reliability of the attitude scale by calculating its internal consistency ($\alpha = .85$) (Scott et al., 2003). The internal consistency of the knowledge scale was also calculated ($\alpha = .69$) (Scott et al., 2003).

Kempenaar and Darwent (2011) aimed to keep the changes to the original questionnaire to a minimum within the Adapted Infant Feeding Questionnaire. Since the original questionnaire was meant for use with midwives, the questions they found to be unsuitable for mothers were removed (Kempenaar & Darwent, 2011). They piloted their questionnaire to five experienced peer supporters and further removed the questions found to be irrelevant towards mothers (Kempenaar & Darwent, 2011). No calculations concerning validity and reliability of the adapted questionnaire were performed (Kempenaar & Darwent, 2011).

The Cronbach's alpha of the Adapted Infant Feeding Questionnaire was calculated to measure its internal consistency for use with prenatal mothers in this study. The internal consistency of the attitude scale was calculated ($\alpha = .87$). The knowledge scale was measured for internal consistency as well ($\alpha = .72$). According to Bannon (2013), a Cronbach's alpha of .70 or above is acceptable for internal consistency measurements. No validity and reliability testing were done for the demographic or postpartum portions of the questionnaires as they were not measuring an overall concept and were treated as independent units of analysis.

Descriptive Statistics

Due to the high attrition rate and small sample size among the completed phase 3 surveys, it was not feasible to perform statistical analyses on research questions 1, 2, 3, and 7. Instead, these variables were compared to the BORN database in percentages.

The BORN database percentages reported are from 2015, which was the most recent data available from a BORN research assistant in March of 2017. The data used from the BORN database, to report breastfeeding percentages right after delivery, were from those who achieved a breastfeeding latch after delivery. Results should be interpreted with caution due to the high attrition rate and small sample size for phase 3 data.

Interestingly, the study participants had a lower intent to breastfeed percentage compared to BORN, however had a higher breastfeeding percentage after delivery and at hospital discharge. Although it appeared that the same participants breastfed and formula fed at hospital discharge ($n = 9$) and at six weeks postpartum ($n = 9$), there were 6 participants that exclusively breastfed up until hospital discharge and at six weeks postpartum. These 6 participants were able to exclusively breastfeed while overcoming barriers found in the hospital, such as: difficulties latching, low milk supply, nipple/breast pain, and newborn illnesses, such as fluid in lungs, respiratory issues requiring CPAP, and a tongue-tie. There were 3 participants who exclusively breastfed at hospital discharge, however 1 was combination feeding by her 6-week postpartum OB appointment and 2 were strictly formula feeding. Difficulties they experienced with breastfeeding were difficulties latching, low milk supply, and nipple/breast pain. The remaining 4 participants combination fed at hospital discharge, however by their 6-week postpartum appointment 1 was strictly formula feeding and the other 3 were exclusively breastfeeding. The 1 participant who resulted in strictly formula feeding commented that she had difficulties latching, her newborn was jaundiced, and she “felt the hospital was forcing a latch and made her feel uncomfortable”. The 3 participants who exclusively breastfed after combination feeding in the hospital, overcame challenges such as

difficulties latching, newborn blood glucose concerns, and jaundice. Study participants were asked to identify their preferred mode of education. In order of preference, most participants seemed to favour the reading material, then the videos, and lastly the smartphone applications. There were 12 participants who recommended introducing prenatal breastfeeding education in the obstetricians' offices and 1 participant who did not.

Table 2.

Descriptives of Study Participants Compared to BORN data			
	Study Participants (n)	Study Participants (%)	BORN n (%)
Intent to Exclusively Breastfeed *			
Yes	78	64.5	4108 ^a (72.5)
Other	43	35.5	1555 ^a (27.5)
Breastfed After Delivery **			
Yes	13	100	2758 ^b (47.9)
No	0	0	339 ^b (5.9)
Type of Feeding at Hospital Discharge **			
Breast Milk	9	69.2	3197 ^a (55.6)
Formula	0	0	601 ^a (10.4)
Combination	4	30.8	1302 ^a (22.6)
Other/Missing	-----	-----	657 ^a (11.4)
Recommend Introducing Education at the OB Office			
Yes	12	92.3	-----
No	1	7.7	-----

* Study Participants *N* = 121

^a BORN *N* = 5,663

** Study Participants *N* = 13

^b BORN *N* = 5,757

*** Study Participants *N* = 12

Results for the Linear Mixed Model Analyses

The Linear Mixed Model was used to analyze the impact breastfeeding education had on breastfeeding attitudes and breastfeeding knowledge for research questions 4 and

5. This model is used for dependent continuous variables that are normally distributed (Azuerro et al., 2010). It is most widely used for longitudinal data because of its flexibility (Azuerro et al., 2010). The Linear Mixed Model is preferred over paired sample t-tests when dealing with small samples, missing data, and possible attrition, because paired sample t-tests require complete data sets and use listwise deletion for cases when confronted with missing data (Pietrzak et al., 2010). Longitudinal data sets with different numbers of observations per participant, or participants measured at different points in time, are easily analyzed with this type of model (West, 2009). The Linear Mixed Model revealed that breastfeeding attitudes and knowledge scores were significantly higher, independently and simultaneously, after the prenatal breastfeeding education was completed ($p = < .001$).

Table 3.

Linear Mixed Model Analysis of Education on Attitudes and Knowledge					
Outcome	Mean	Mean Difference	95% CI	F	p
Attitudes					
Phase 1	107.224	-----	104.500-109.948	-----	-----
Phase 2	114.858	-----	111.328-118.387	-----	-----
Phase 2-1	-----	7.634	4.708-10.560	27.419	< .001*
Knowledge					
Phase 1	26.390	-----	25.286-27.495	-----	-----
Phase 2	30.083	-----	28.605-31.560	-----	-----
Phase 2-1	-----	3.692	2.397-4.988	32.739	< .001*
Attitudes & Knowledge					
Phase 1	134.754	-----	131.315-131.193	-----	-----
Phase 2	145.449	-----	140.993-149.904	-----	-----
Phase 2-1	-----	10.695	6.988-14.402	33.557	< .001*

* $p = < .001$

Results for Chi-square Analyses

The phase 3 sample size was too small to examine how the determinants of health relate to breastfeeding rates for research question 6. Instead, Chi-square analyses were performed to assess the impact the determinants of health, available breastfeeding support systems, and previous breastfeeding education had on intent to breastfeed. The difference in participant totals can be attributed to the handling of missing data and the deletion of missing cases. The continuous variable age, needed to be recoded into a dichotomous variable in order to meet the assumption of greater than 5 cases per cell to perform Chi-square testing with intent to breastfeed. Independent samples t-test and ANOVA were due to the categorical nature of the dependent variable (Bannon, 2013). All other variables were dichotomized similarly to the categories identified as having lower breastfeeding rates in the BORN database. This task was completed in order to meet the assumption of greater than 5 cases per cell for Chi-square testing and to meet the assumption of a two-by-two crosstabs for Fisher's Exact testing. Interestingly, after performing Chi-Square testing, there were no demographic variables that proved to be significant in predicting intention to breastfeed. However, the support of a significant other resulted in a suggestive relationship with intention to breastfeed ($p = < .05$).

Table 4.

Chi-Square Analysis of Dichotomous Variables for Intention to Breastfeed					
Variable	Intention to Breastfeed (BF) <i>n</i>			<i>X</i>²	<i>p</i>
	Intent	No Intent	Total		
Participant	-----	-----	-----	.326	.568
Age					
≤ 30	40	20	60	-----	-----
≥ 31	37	23	60	-----	-----
Other	23	13	36	-----	-----

(Continued)

Table 4. Continued

Variable	Intention to Breastfeed (BF) <i>n</i>			X^2	<i>p</i>
	Intent	No Intent	Total		
Income	-----	-----	-----	2.779	.096
≤ \$39,000	11	11	22	-----	-----
≥ \$40,000	62	28	90	-----	-----
Employment	-----	-----	-----	.776	.378
Full Time	38	24	62	-----	-----
Other	40	18	58	-----	-----
Education	-----	-----	-----	2.909	.088
≤ High School	14	13	27	-----	-----
> High School	62	27	89	-----	-----
Place of Birth	-----	-----	-----	3.380	.066
Canada	68	31	99	-----	-----
Other	10	11	21	-----	-----
Immigrant	-----	-----	-----	1.684	.194
Yes	8	8	16	-----	-----
No	70	35	105	-----	-----
Minority	-----	-----	-----	.568	.451
Yes	17	12	29	-----	-----
No/Other	61	31	92	-----	-----
Support from: Significant Other	-----	-----	-----	4.343	.037*
Yes	52	18	70	-----	-----
No	25	20	45	-----	-----
Support from: Family	-----	-----	-----	.046	.831
Yes	66	32	98	-----	-----
No	11	6	17	-----	-----
Support from: Friends	-----	-----	-----	2.297	.130
Yes	59	24	83	-----	-----
No	18	14	32	-----	-----
Support from: Others	-----	-----	-----	.167	.683
Yes	10	6	16	-----	-----
No	67	32	99	-----	-----

(Continued)

Table 4. Continued

Variable	Intention to Breastfeed (BF) <i>n</i>			X^2	<i>p</i>
	Intent	No Intent	Total		
Previous BF Experience	-----	-----	-----	.058	.810
Yes	33	16	49	-----	-----
No	45	24	69	-----	-----
Education: Prenatal Class	-----	-----	-----	.239	.625
Yes	18	8	26	-----	-----
No	57	32	89	-----	-----
Education: Doula	-----	-----	-----	2.210	.176 (1-sided Fisher's Exact)
Yes	4	0	4	-----	-----
No	71	40	111	-----	-----
Education: Lactation Consultant	-----	-----	-----	.551	.458
Yes	23	15	38	-----	-----
No	52	25	77	-----	-----
Education: Peers/Friends	-----	-----	-----	.001	.973
Yes	41	22	63	-----	-----
No	34	18	52	-----	-----
Education: Health Care Professional	-----	-----	-----	1.125	.289
Yes	28	11	39	-----	-----
No	47	29	76	-----	-----
Education: Other	-----	-----	-----	3.582	.058
Yes	21	5	26	-----	-----
No	54	35	89	-----	-----
Education: None	-----	-----	-----	.006	.939
Yes	4	2	6	-----	-----
No	71	38	109	-----	-----

* $p = < .05$

CHAPTER V

DISCUSSION

This study considered the effects of introducing prenatal breastfeeding education in the obstetricians' waiting rooms. Participants recruited into this study completed anonymous surveys at three points in time. The first phase was completed during their prenatal obstetrician appointment prior to educational breastfeeding materials being given to them. The second phase was completed at their next prenatal appointment within their obstetrician's office, after the participants independently reviewed the educational materials. The third phase was completed at their 6-week postpartum appointment with their obstetrician. A sample of 135 participants was recruited, with 121 completing the first phase of the study, 44 completing the second, and 13 completing the third. The following discussion presents this study's findings while taking into account existing literature and the previously mentioned conceptual framework. Implications to nursing education and practice, implications to healthy public policy, implications for future research, and this study's limitations are also discussed.

Due to the small number of respondents to the phase 3 surveys, frequencies were used to compare study participants' breastfeeding rates to the BORN database, and to report their recommendations for prenatal breastfeeding education. The study participants had a lower intent to breastfeed percentage compared to BORN, however, had a higher breastfeeding percentage after delivery and at hospital discharge than BORN. The percentage of women remained the same between those who exclusively breastfed at hospital discharge and at their postpartum obstetricians' appointment.

Further investigation should be conducted to determine if the higher percentage of breastfeeding rates after delivery and at hospital discharge remain higher than the BORN database when an adequate sample size is recruited. The BORN database collects breastfeeding information after delivery and at hospital discharge, however does not follow postpartum breastfeeding trends of women under the care of obstetricians as they do with midwifery care. The results of postpartum breastfeeding trends require further investigation with a larger sample size. The phase 3 surveys revealed a number of women who combination fed at hospital discharge due to complications during their hospital stay, however were exclusively breastfeeding by their 6-week postpartum appointment.

Future research should aim to investigate the significant variables and rates between those who combination feed at hospital discharge and those who exclusively breastfeed by 6 weeks postpartum. The belief of having an insufficient milk supply is a frequently reported reason that results in supplementation of formula across countries, socioeconomic levels, and generations (Lou et al., 2014). Influential factors towards supplementation include the beliefs that colostrum cannot satisfy newborn hunger and that infants do not need to be breastfed right after birth (Lou et al., 2014). Further research should be done to examine mothers' attitudes and knowledge towards the benefits of colostrum. Mothers have reported believing that colostrum is insufficient and harmful, and supplementation will prevent dehydration, hypoglycemia, jaundice, and elevated weight losses in their newborn (Gagnon et al., 2005). These findings indicate the need to further explore mothers' breastfeeding trends past the postpartum colostrum

phase with a larger sample size than what was collected in phase 3 of this study to prevent type II error.

To the researcher's knowledge, there has been no previous research done on preferred modes of prenatal breastfeeding education between reading materials, videos, and phone applications. There have also been no known studies done on the introduction of prenatal breastfeeding education in the obstetricians' offices. Additional research should be done to investigate the preference of prenatal breastfeeding materials in the obstetricians' offices with a larger sample size. This study's small postpartum sample size determined that reading materials were preferred, then videos, and lastly smartphone applications, however should be investigated further with more rigorous statistical analyses. One participant wrote on her phase 3 survey that she would "definitely" recommend the introduction of prenatal breastfeeding education in the obstetricians' waiting rooms.

Surprisingly, this was the first known study to investigate the impact prenatal breastfeeding education in the obstetricians' waiting rooms had on breastfeeding attitudes and knowledge. Negative breastfeeding attitudes and lack of breastfeeding knowledge have been identified as barriers to breastfeeding (Best Start Resource Centre, 2014b). Linear Mixed Model analyses revealed an increase in breastfeeding attitudes and knowledge within study participants, between phases 1 and 2 of the study, after the completion of the offered prenatal breastfeeding education. Unfortunately, the statistical analysis of attitude and knowledge scores compared to postpartum breastfeeding rates was not possible due to the high attrition rate for phase 3 surveys and its small sample size. Comparatively, the authors of the Adapted Infant Feeding Questionnaire,

Kempenaar and Darwent (2013), introduced a peer support breastfeeding program with a sample size of 23 women. They also obtained significant results in breastfeeding attitude and knowledge scores. The mean difference in breastfeeding attitudes and knowledge scores (10.695%) obtained in this study was higher than the mean difference in scores (10.4%) discovered in Kempenaar and Darwent's (2013) study. They had identified a limitation within their sample size and statistical power, so further investigation should be performed to determine if a difference exists between the scores and breastfeeding rates between an independent breastfeeding education program as suggested in this study, to a peer breastfeeding support program as suggested in their study.

Unfortunately, due to the limiting sample size within phase 3 of this study, Chi-square tests were not possible to investigate the relationship demographics, available breastfeeding support, and previous breastfeeding education had on postpartum breastfeeding rates. Instead, Chi-square testing was done to determine their relationship with intention to breastfeed. The Best Start Resource Centre (2014b) related low breastfeeding rates within those who are unmarried, under 20 years of age, below the poverty income line, less than a high school education, immigrants, and minorities. They also reported a lack of intention to breastfeed as a barrier towards positive breastfeeding outcomes (Best Start Resource Centre, 2014b). Surprisingly, there were no significant determinants of health or methods of previous breastfeeding education found to influence breastfeeding intent within this study.

Conversely, Chi-square analyses determined a significant relationship between support from a significant other towards intention to breastfeed. The Best Start Resource Centre (2014b) reported a lack of intention to breastfeed as a barrier towards

breastfeeding, and lower rates of breastfeeding to those who were unmarried. Support from a partner was deemed a crucial resource found to improve breastfeeding outcomes within Ontario (Best Start Resource Centre, 2014b; Sheehan et al., 2001).

Current Breastfeeding Trends in Windsor-Essex County

The 2017 breastfeeding culture of Windsor-Essex County needs to bear some consideration when reviewing the results of this study. A popular Facebook group in Windsor-Essex County consists solely of mothers and is closed to the public. Its initial purpose of development was to create a peer support group for mothers within the community and was founded by local women. This group has grown to over 8,000 members and has become a well-known foundation geared towards positively supporting mothers within the community. One of the stipulations of the group is that the offering of medical advice is not tolerated, and only peer support for non-medical concerns is supported. This group provides access to supportive breastfeeding resources and consists of some registered nurses and lactation consultants as members. Unfortunately, there are also members who support and encourage combination feeding or strictly formula feeding.

In February of 2017, a document from The Fed Is Best Foundation blog circulated through social media and within the local above-mentioned Facebook group. The document, *If I Had Given Him Just One Bottle, He Would Still Be Alive*, was written by a mother and released on the five-year anniversary of her newborn's death from starvation at a Baby-Friendly hospital (Johnson, 2017). Johnson (2017) commented on her experiences within a Baby-Friendly hospital that failed to miss her newborn's warning signs of dehydration and passed away after being discharged from the hospital's care.

This foundation consists of advocates and advisors with a medical background who support both breast and formula feeding. There is a resource section for parents within this website that includes the concern over hospital policies and their main goal towards increasing breastfeeding rates at hospital discharge. “Breast is best” is a common phrase used within maternal newborn healthcare. “Fed is best” is a new United States of America based movement that has recently reached Canada, in attempt to prevent accidental newborn deaths caused by starvation. Johnson, along with the founder of The Fed is Best Foundation, Dr. Christie del Castillo-Hegy, appeared on The Doctors television show on May 9th of 2017 to discuss their personal experiences with breastfeeding and the fed is best movement (The Doctors Staff, 2017).

Anecdotally, the fed is best movement may have influenced participation rates during the time of this study. Potential recruitment may have been influenced by conflicted feelings towards breastfeeding exclusivity. The high attrition rate within the study may have been impacted by the fed is best movement emerging during the data collection period of this study. One participant added commentary to her phase 1 survey by stating, “if you feel you have insufficient milk you should top up with a bottle with your doctor’s support because FED IS BEST!”

During the time of this study, the local barriers to breastfeeding may have influenced interest in this study’s participation. The main maternal newborn hospital unit within Windsor-Essex County supplies bottles of formula to women who request it at any point of time during hospital admission. Public knowledge of this may have influenced breastfeeding interest. One study participant commented on her phase 1 survey that she “had an upsetting past experience with formula top ups and felt bullied into formula

feeding with her first baby.” Another participant wrote formula supplementation was “strongly recommended by the hospital with her first child.” Also, a public health nurse had mentioned experiencing difficulty when recruiting participants into her own study she is completing within physicians’ offices, due to the disinterest of women wanting to participate in two studies at the same time. This may have also played a factor in the recruitment for this study. Furthermore, the Baby Box Canada program was implemented throughout Ontario the end of 2016 and into the year of 2017 (Baby Box Canada, 2017). The baby box program supplies boxes to new parents that are free of charge. Its contents may vary, however includes items such as: blankets, toys, and hygiene products. Upon signing up for the baby box program, coupons for formula, formula samples, and special formula rates are offered. This also may have impacted potential participants interest in breastfeeding. Lastly, being a border city may have influenced breastfeeding interest due to the requirement to return to work at 6 weeks postpartum for those employed in the United States of America. One participant commented, “regardless of what I’ve read, breastfeeding is incompatible with working outside of home. This would be difficult/impossible for me personally.”

Conceptual Discussion

The MDHM was used to guide this study due to the previously identified barriers women face in accessing prenatal education (Dahlgren & Whitehead, 1991). A strategy to reduce the barriers some women experience in accessing prenatal breastfeeding education was implemented through this study. An upstream approach by promoting healthy communities in order to influence positive health outcomes is acknowledged in the MDHM (CCSDH, 2015; Mason, 2014).

According to the MDHM, the outermost layer influencing health outcomes requires political action at national or international levels (Dahlgren & Whitehead, 1991). Taking political action to create structural changes to socio-economic, cultural, and environmental conditions is discussed later on in this chapter under the *Implications to Policy* section. This section will also discuss the second layer of this model: healthy public strategies and business strategies to improve living and working conditions. The model's third layer involves the strengthening of social and community support (Dahlgren & Whitehead, 1991). Providing prenatal breastfeeding resources enables women to share their resources with family, friends, and community members. Further research should be done to determine if providing prenatal breastfeeding education improves women's perceived level of social and community support. Introducing prenatal breastfeeding education in the obstetricians' waiting rooms was significant in influencing the model's fourth layer. Individual lifestyle factors, such as breastfeeding attitudes and knowledge, were positively associated with intent to breastfeed. This innovative concept was able to limit some obstacles women experience in accessing prenatal breastfeeding education, such as financial, transportation, and language barriers. Unexpectedly, there was no association found between the model's core fixed factors, such as age, birthplace, and self-identification as a minority, regarding intention to breastfeed.

Implications to Nursing Education and Practice

Nursing education provides little training in breastfeeding support, making personal breastfeeding experience an essential factor for postpartum nurses to support breastfeeding (Martucci, 2012). The RNAO (2003) recommends all nurses who work

with prenatal populations to be knowledgeable in their personal influences and the community's demographic variables that can influence breastfeeding initiation. This pilot study found a significant relationship between women who believe they receive breastfeeding support from their significant other and their intent to breastfeed. This supports the RNAO's (2003) claim that nurses need to have an understanding of the influence a woman's care partner has on her attitudes towards breastfeeding and support them. Therefore, it is recommended that nursing programs integrate breastfeeding education throughout the curriculum. Breastfeeding education should also include teaching nursing students the factors that influence breastfeeding outcomes so that they can identify patients at an increased risk for breastfeeding cessation and increase their awareness of breastfeeding resources within the community.

Further research should be completed to determine if an association exists between women's perception of nursing assistance and their success in breastfeeding. The RNAO's (2003) Breastfeeding Best Practice Guidelines discussed the importance of nurses being knowledgeable in the benefits of breastfeeding, implementation of breastfeeding, and management of breastfeeding in order to establish a supportive breastfeeding relationship with their patients. This warrants further investigation into the effects that mandatory breastfeeding education for maternity nurses would have on their breastfeeding attitudes and knowledge. Breastfeeding attitudes and knowledge was found to significantly increase scores after breastfeeding education was introduced in a prenatal population of women. These scores could be compared to the nurses who would choose to partake in this suggested breastfeeding education program. An increase in nursing attitudes and knowledge towards breastfeeding can potentially increase nurses

motivation to assist with breastfeeding, influence the perceived breastfeeding support felt by their patients, and in turn, increase breastfeeding rates. An educational breastfeeding program for maternity nurses, as suggested by Amick (2015), could potentially increase breastfeeding knowledge among nursing staff and improve breastfeeding attitudes to become better facilitators towards breastfeeding. Maternity units could benefit from providing breastfeeding classes during their nurses' orientations, as well as regular breastfeeding classes consisting of current updates in breastfeeding practices.

Certain comments added by participants within their surveys warrant further investigation. Some women within the study expressed concern over their nurses strongly recommending the use of formula supplementation. The LLL emphasized the important role nurses have in caring and supporting breastfeeding mothers (Martucci, 2012). Gagnon et al. (2005) reported nurses supporting formula supplementation due to breastfeeding problems, infant behaviour, and maternal fatigue. Anecdotally, when supplementation concerns were discussed with nurses within the local maternity unit, most felt the need to suggest formula supplementation due to concerns of: dehydration, weight loss, jaundice, and maternal fatigue. Glover (1995) supported these concerns when she reported nurses' reasons for supplementation as prevention of dehydration, hypoglycemia, hyperbilirubinemia, weight loss, infant fussiness, and maternal fatigue. The part time availability of registered nurse lactation consultants in the hospital may have influenced maternity nurses discomfort in discharging newborns from the hospital with breastfeeding and health concerns. The absence of a hospital policy concerning supplementation might also affect nurses' decisions towards suggesting formula supplementation.

Recognizing the effect support from a significant other and support from a lactation consultant may have on breastfeeding outcomes, nurses should encourage the support of a care partner throughout a woman's hospital stay and encourage a lactation consult to assess breastfeeding progress. The implementation of increasing lactation consultants availability to full time could potentially assist in decreasing women's breastfeeding challenges experienced in the hospital and decreasing nursing concerns over newborn illness that leads them to suggest formula supplementation. The application of a hospital policy, similar to what was suggested by Glover (1995), may assist nurses in deciphering when formula supplementation is or is not necessary. Glover (1995) suggests the use of a flow chart to assist in formula supplementation decision-making and a supplementation policy (Appendix N).

Implications to Healthy Public Policy

This is the first known study that investigates the impact of introducing prenatal breastfeeding education in the obstetricians' waiting rooms. The increase in breastfeeding attitudes and knowledge scores of prenatal women post breastfeeding education validates the need to create a healthy public policy directed towards positive breastfeeding outcomes. The introduction of free breastfeeding education resources within obstetricians' offices is a political action the government can use to support the healthy promotion of breastfeeding. This socio-economic strategy supports using breastfeeding as a primary prevention of maternal and newborn illnesses. There is also a personal and economic cost-benefit when women choose to breastfeed.

The breastfeeding resources provided within this study are publicly available online free of cost. A public policy could be created to assist health care professionals

working with prenatal women in promoting the use of these cost-free breastfeeding resources outlined within this study. The Breastfeeding Matters booklets along with the Region of Peel breastfeeding videos are available in a variety of languages to provide breastfeeding support to a number of cultures. Increasing awareness to the topics of breastfeeding within the community could create a culture where breastfeeding discussions are a norm. Increasing public awareness of the Ontario Disability Support Program Breastfeeding Nutritional Allowance through healthy public strategies may also improve living conditions for those living with disability, as well as increase breastfeeding interest. The implementation of a peer support program, as suggested by the Best Start Resource Centre (2014b), throughout all health units within Ontario may increase breastfeeding self-efficacy among women. Society may benefit if an increase in breastfeeding knowledge with participants results in an increase in breastfeeding rates in Windsor-Essex County, which can in turn, increase maternal and newborn health outcomes.

Implications for Future Research

The limitations discovered through this pilot study need to be reviewed prior to an attempt to replicate this research. As mentioned previously, a larger sample size for phase 3 of the study would add depth and a further understanding as to what the postpartum breastfeeding trends are of Windsor-Essex County. As identified by the Best Start Resource Centre (2015), the breastfeeding related strengths and weaknesses of Windsor-Essex County should be investigated to develop effective strategies in improving breastfeeding within the community. Obtaining demographic and

breastfeeding datasets from the BORN database would benefit future research by providing the ability to compare and analyze the variables statistically.

A full replication of the study could be done with certain changes made to the study to address attrition and missing data due to the research design. Ensuring the research assistants are available throughout the whole data collection phase may assist in a quicker recruitment period. There were some weeks where data collection did not occur due to the conflicted availability of the research assistants. Data collection occurred during their full time clinical consolidation and final exams for school, which took priority over this research study. The use of a variety of nursing students from various years could assist in the consistency of recruitment through these conflicting periods of time. Ensuring there are research assistants available in the office at each phase of the study, instead of only during the recruitment phase could increase retention of study participants. The use of reminder e-mail notifications to complete the paper surveys or the use of online surveys might assist in minimizing participant drop out rates due to the stress women may feel in completing paper surveys over the prenatal and postpartum periods.

In addition, a mixed methods study could provide descriptive details towards participants' views on introducing prenatal education in the obstetricians' offices. Surveying women quantitatively in addition to a secondary form of data collection such as interviews, can add to the quality of data collected. A number of participants added commentary to their survey answers, exposing their desire to provide more detail in regards to their personal experiences.

Maternal mental health was not addressed within this study. Further investigation should be done on the effects of maternal exhaustion and mental illness on supplementation rates. Gagnon et al. (2005) reported those with anxiety as having more than double the risk of supplementation. Conversely, the Best Start Resource Centre (2014b) reports similar breastfeeding rates among women with and without mental illness within Ontario.

Limitations

This study was the next step taken in Kempenaar and Darwent's (2011) analysis that measured breastfeeding attitude and knowledge scores after completing a breastfeeding peer support training program among 23 mothers. This study piloted the idea of introducing independent breastfeeding education to a larger number of participants, however participant drop out rate was significant. The high attrition rate between the three phases undermines the external validity of this research (Polit, 2010). Sadly, Dr. Brkovich had decided to focus on gynecological care and the last of her prenatal patient population was missed prior to the start of data collection. This could have added to the small sample size of this study significantly, as she cared for approximately 80 women in their third trimester prior to the beginning of this study. Secretarial staff at both offices had also mentioned to research assistants they had forgotten to hand out phase 2 and phase 3 surveys at times. The main secretary at one of the offices had also mentioned being unsure if the other staff members handed out the surveys when she was gone away on vacation.

Submission of phase 3 surveys may have been limited due to the data collection period occurring during the summer months or due to the exclusion criteria outlined for

the secretarial staff to withhold phase 3 surveys: outcome of stillbirth, neonatal death, or unknown CAS apprehension. Due to confidentiality and anonymity, it was impossible to track the reasoning towards participant drop out or exclusion. The results of this particular study cannot be generalized to the full population due to its high attrition rate and difficulty in determining the reasons for participant drop out (Polit, 2010). Those who remained in the study may have had a higher self-efficacy towards breastfeeding showing the potential for selection bias. This study was piloted over two offices, however can be replicated over all of the obstetricians' offices within Windsor-Essex County to gain a larger and more meaningful sample size resulting in a higher statistical power. Inclusion of Building Blocks for Better Babies and the Multicultural Council of Windsor-Essex County Immigrant Health Clinic could have also been included to add depth to the demographic variables studied.

Unfortunately, there were some issues with the design of the study. Explanation of the participant identification code was only available in the first phase. Some participants forgot their identification codes and were excluded from the study. Some participants may have decided not to submit their phase 2 and 3 surveys if they were unsure of their identification code. Explanation of the makeup of the participant identification code should be made available in every phase of a longitudinal study. There were some other missing details that should be included when replicating or adding to this study. Phase 1 surveys would have benefited from adding participants gestational age and preferred educational materials. Planned feeding type could have also been added to phase 2 and 3 surveys to assess any changes in decisions towards type of

newborn feeding. Further research should be performed with these modifications kept in mind.

Conclusion

In conclusion, this pilot study discovered significant relationships and there is value in replicating this study for further research. To the researcher's knowledge, this was the first study known to explore the effects of introducing prenatal breastfeeding educational resources, for independent study, within the obstetricians' waiting rooms. Surprisingly, there were no demographic factors found that were related to breastfeeding intention within this study. The support of a significant other was significantly related to breastfeeding intention. Future research should be completed with the suggested study modifications and an adequate sample size to further assess the impact of demographic variables on breastfeeding intention and postpartum breastfeeding rates. The prenatal breastfeeding education resources were found to be significant in increasing breastfeeding attitudes and knowledge within the participant group. Recommendations for nursing, public policy, and future research were discussed. Introducing prenatal breastfeeding education in the obstetricians' waiting rooms can potentially increase breastfeeding rates within Windsor-Essex County, which can in turn, improve the condition of maternal and newborn health within the community.

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APPENDICES

Appendix A

Breastfeeding Resources

1. Aboriginal Child Resource Centre
2. All 4 Mama's (Closed Facebook Mama's Group)
3. A Mother's Blessing
4. Association of Ontario Doulas (formerly DoulaCARE)
5. Babydocs Prenatal Class
6. Bellies in Bloom
7. Best Start Resource Centre
8. Birthright of Greater Windsor
9. Birth Windsor
10. Building Blocks for Better Babies
11. Can-Am Indian Friendship Centre of Windsor – Aboriginal Healthy Babies
Healthy Children
12. Childbirth and Postpartum Professional Association Canada (CAPPA)
13. DONA International
14. Erie St. Clair VON – Windsor-Essex Branch
15. The Family Wellness Centre
16. Holy Name of Mary Church “Mom's and Tots Program”
17. La Leche League
18. Life With a New Baby
19. Love the Bump – Prenatal Class
20. Midwives of Windsor
21. Mindful Mama's: Mindfulness, One Breath at a Time
22. Motherisk
23. Mom and Baby To Be App (M+B2B)
24. Mom's Group (Leamington Evangelical Mennonite Church)
25. Ontario Early Years Centre
26. Our Lady of Guadalupe Home of Windsor
27. Parents of Multiple Births Association (POMBA)
28. Public Health Agency of Canada
29. Sunparlour Pregnancy Resource Centre (Pregnancy & Resource Centre)
30. Teen Health Centre
31. Telehealth Ontario Breastfeeding Hotline
32. Windsor Breastfeeding Coalition
33. Windsor-Essex County Health Unit – HBHC
34. Windsor-Essex County Health Unit – Reproductive and Early Child Health
35. Windsor-Essex County Right to Life Association
36. Windsor Prenatal Class
37. Windsor Regional Hospital – Metropolitan Campus – Maternal Newborn Clinic
38. WYNI (When You Need It) App

Appendix B

Demographic Questionnaire

Identification Code: _____

1. What is your age? _____

2. Current Marital Status (Please place an "x" within ONE box) ex.

Single

Exclusive relationship with a partner

Common Law

Married

Separated

Divorced

Decline response

3. What is the approximate total annual income of your household before taxes?
(Please place an "x" within ONE box)

0 - \$19,999

\$20,000 - \$39,999

\$40,000 - \$59,999

\$60,000 - \$79,999

\$80,000 - \$99,999

\$100,000 - \$119,999

\$120,000 - \$139,999

\$140,000 - \$159,999

\$160,000 and up

Decline response

4. Employment (Please place an “x” within ONE box)

- Full time
- Part time
- Student
- Temporary illness and/or disability
- Unemployed
- Other

- Decline Response

5. Highest Level of Education Received (Please place an “x” within ONE box)

- Some grade school
- Grade school
- High school diploma or certificate
- Registered apprenticeship or trades certificate or diploma
- College or other non-university certificate or diploma
- University certificate, diploma, or degree
- Postgraduate degree
- Doctorate

- Decline response

6. What is your place of birth? (Please place an “x” within ONE box or add comment under “Other”)

- Canada
- United States
- Eastern Europe
- Western Europe

- Africa
- Central Asia
- Southeast Asia
- Australia
- Middle East
- Latin/South American
- Caribbean
- Other _____

Decline Response

7. A) Are you a landed immigrant to Canada? (Please place an "x" within ONE box)

Yes

No

Decline response

B) If you answered no to question 7A, please move on to question 8. If you answered yes to 7A, in what year did you first become a landed immigrant?

(yyyy)

8. Do you self-identify as belonging to any of the following minority groups? (Please place an "x" within ONE box or add comment under "Other")

Aboriginal

First Nations (North American Indian)

Metis

Inuit

South Asian

Chinese

- Black/African Canadian
- Filipino
- Latin American
- Arab
- Southeast Asian
- West Asian
- Korean
- Japanese
- Other visible minority not included elsewhere _____

Decline response

9. Available breastfeeding support systems/resources (Please place an “x” for ALL that apply)

- Significant other
- Family
- Friends
- Other (Please list: _____)

Decline response

10. Planned newborn feeding (Please place an “x” within ONE box)

- Exclusively breastfeeding
- Formula feeding
- Combined breast and formula feeding
- Undecided

Decline Response

11. Previous breastfeeding experience (Please place an “x” within ONE box)

- Personal experience breastfeeding other children
If so, how long did you breastfeed? # of days _____ weeks _____ months _____
- Never attempted to breastfeed other child/children and chose to formula feed
- Attempted to breastfeed other child/children, but chose to formula feed
- No experience breastfeeding other children/First time mother
- Decline response

12. Previous breastfeeding education (Please place an “x” for ALL that apply)

- Attended prenatal class
- Doula
- Lactation consultant
- Peers/Friends
- Health care professional
- Other (Please list: _____)
- Decline response

Survey adapted from following references to better suit this study:
 Meloche, K. L. (2016). *The development of the birth perception scale: How are perceptions related to individual and social factors involved in preferences for childbirth?* (Unpublished thesis). Queen’s University, Kingston.
 Statistics Canada (2011). *The national household survey*. Retrieved from http://www23.statcan.gc.ca/imdb-bmdi/instrument/5178_Q2_V1-eng.pdf

Appendix C

Postpartum Questionnaire

Identification Code: _____

Gestation (How many weeks and days you were when you delivered):
_____ weeks _____ days

Baby's Birth Weight: _____

1. What was your baby fed first after delivery? (Please place an "x" within ONE box)

Breast milk

Formula

Decline response

2. How was your baby fed up until hospital discharge? (Please place an "x" for ALL that apply)

Breastfed

Formula fed

Decline response

3. How is your baby currently being fed? (Please place an "x" for ALL that apply)

Breastfed

Formula fed

When did you introduce formula? # in days _____ # in weeks

Decline response

4. Supportive breastfeeding resources in hospital (Please place an "x" for ALL that apply)

Nurse

- Lactation consultant
- Doula
- Doctor
- Family
- Peers/Friends
- Other (Please list: _____)

Decline response

5. Supportive breastfeeding resources in community (Please place an “x” for ALL that apply)

- Nurse
- Lactation consultant
- Doula
- Doctor
- Family
- Peers/Friends
- Other (Please list: _____)

Decline response

6. Breastfeeding challenges met while in hospital (Please place an “x” for ALL that apply)

- Difficulties latching
- Low milk supply
- Nipple/breast pain
- Maternal illness: _____
- Newborn illness: _____
- Other _____

Decline response

7. Breastfeeding education methods used (Please place an “x” for ALL that apply)

Reading material

Videos

Smartphone applications

None

Decline response

8. Preferred method of breastfeeding education (Please rank material preference with “1, 2, and 3” within the first three boxes, or place an “x” in the fourth or fifth box)

Reading material

Videos

Smartphone applications

None

Decline response

9. Would you recommend introducing prenatal breastfeeding education into obstetrician’s offices? (Please place an “x” within ONE box)

Yes

No

Unsure

Decline response

10. Other breastfeeding education used that was not provided by researcher (Please place an “x” for ALL that apply)

- Attended prenatal class
- Doula
- Lactation consultant
- Peers/Friends
- Health care professional
- Other (Please list: _____)

- Decline response

Survey created according to data from:

Locally Driven Collaborative Project Breastfeeding Surveillance Project Team. (2013).

Breastfeeding surveillance in Ontario. Retrieved from <http://www.bfontario.ca/wp-content/uploads/2013/02/LDCP-Phase-1-Report-Breastfeeding-Surveillance-in-Ontario-May-2013.pdf>

Appendix D

Adapted Infant Feeding Questionnaire

ID Code: _____ **Today's Date:**

The following are only applicable after educational materials are completed:

Date you completed the videos/booklet/apps:

Location you read/watched the materials (ex. home, office, etc.):

Section A

For each of the statements **on the following two pages**, please indicate how much you agree or disagree by circling the number that most closely corresponds to your opinion. The number "1" indicates strong disagreement, whereas "5" indicates strong agreement.

	Strongly disagree				Strongly agree
1. Formula feeding is good way of letting fathers care for the baby	1	2	3	4	5
2. Breast milk is the ideal food for babies	1	2	3	4	5
3. A mother who occasionally drinks alcohol should not breastfeed her baby	1	2	3	4	5
4. Formula feeding is more reliable because you can calculate the exact quantity of milk the baby is getting	1	2	3	4	5
5. Mothers intending to breastfeed should expect sore nipples as a normal part of breastfeeding	1	2	3	4	5
6. Modern artificial baby milks are nutritionally equivalent to breastmilk	1	2	3	4	5
7. The benefits of breastmilk last only as long as the baby is breastfed	1	2	3	4	5
8. Formula is as healthy for an infant as breast milk	1	2	3	4	5
9. Breastfeeding is incompatible with working outside the home	1	2	3	4	5
10. A breastfed baby is likely to have fewer infections than a formula fed baby	1	2	3	4	5

11. Formula fed babies are more likely to be overfed than breastfed babies	1	2	3	4	5
12. Breastfeeding is beneficial to a mother's health	1	2	3	4	5
13. Formula feeding is more convenient than breastfeeding	1	2	3	4	5
14. Breastmilk alone can satisfy most babies for approximately the first six months	1	2	3	4	5
15. I would be embarrassed if a mother breastfed their toddler in front of me	1	2	3	4	5
16. Breastfeeding is more convenient than formula feeding	1	2	3	4	5
17. In general breastfed babies are healthier than formula fed babies	1	2	3	4	5
18. Mothers who formula feed miss one of the great joys of motherhood	1	2	3	4	5
19. Formula milk is more easily digested than breastmilk	1	2	3	4	5
20. Most mothers have insufficient breastmilk	1	2	3	4	5
21. Breastfeeding provides health benefits for infants that cannot be provided by formula	1	2	3	4	5
22. Formula feeding is the better choice if the mother plans to go out to work	1	2	3	4	5
23. In general, breastfed babies need a top up with supplementary formula feeds	1	2	3	4	5
24. Breastmilk is lacking in iron	1	2	3	4	5
25. Breastfeeding increases mother infant bonding	1	2	3	4	5
26. Breastfed babies need to be fed too often	1	2	3	4	5
27. Breastfed babies are more likely to be overfed than formula fed babies	1	2	3	4	5
28. Mothers who smoke should formula feed their babies	1	2	3	4	5
29. A woman who is fully breastfeeding is less likely to become pregnant three months after delivery than a woman who is formula feeding	1	2	3	4	5
30. A mother of a young infant who feels she has insufficient milk should "top up" with a bottle after each feed	1	2	3	4	5

Section B

For questions 1-7, please indicate how much you agree or disagree that the statement is correct by circling a number. The number "1" indicates strong disagreement, whereas "5" indicates strong agreement.

	Strongly disagree				Strongly agree
1. It is usually advisable for babies to receive a formula feed before the first breastfeed	1	2	3	4	5
2. Frequent breastfeeding in the early newborn period can help reduce jaundice	1	2	3	4	5
3. Growth patterns of breastfed infants differ from those of formula fed infants	1	2	3	4	5
4. If a breastfed infant has not regained his birth weight by two weeks of age, the first intervention should be to discuss supplementing with formula	1	2	3	4	5

5. **How long should a mother breastfeed exclusively according to national guidelines (no juice, formula or solids)?**

Answer: _____

6. **At what age should infants who are being formula fed start solid foods according to national guidelines?**

Answer: _____

7. **At what age should infants who are being breastfed start solid foods according to national guidelines?**

Answer: _____

8. **Giving glucose water is recommended after breastfeeding to help satisfy an infant until the mother's milk comes in (Circle ONE response)**

YES

NO

UNSURE

9. **A breastfeeding mother who is diagnosed as having mastitis should express her milk and throw it away for the first week of antibiotic treatment (Circle ONE response)**

YES

NO

UNSURE

10. **Glucose water helps to decrease the physiological jaundice often seen in breastfed babies (Circle ONE response)**

YES

NO

UNSURE

11. If a healthy full term baby is not breastfed within 8 hours of birth he/she is at risk of hypoglycaemia (Circle ONE response)

YES

NO

UNSURE

12. Glucose water is recommended to help the baby get rid of mucous before initiating breastfeeding? (Circle ONE response)

YES

NO

UNSURE

13. Sore nipples can be prevented by gradually increasing the number of minutes the infant is allowed to breastfeed on each side (Circle ONE response)

YES

NO

UNSURE

14. How do breastfed babies grow in weight compared to formula fed babies at 0-3 months of age: (Circle ONE response)

slower growth

same rate of growth

faster growth

Don't know

15. How do breastfed babies grow in weight compared to formula fed babies at 4-7 months of age: (Circle ONE response)

slower growth

same rate of growth

faster growth

Don't know

16. After a mother's breastmilk comes in, at least how many wet diapers should her newborn have per 24hrs? (Circle ONE response)

3-4,

5-6,

7-8,

9-10,

Don't know

17. Do you think that breastfeeding should be supplemented by: (Place an "x" within ONE box)

Offering water or glucose water or formula before initiating breastfeeding

Offering water, glucose water or formula after each breastfeeding

None of the above

18. If a woman develops mastitis, what is likely to be helpful in relation to breastfeeding? (Place an "x" within ONE box)

Continue to feed on both sides

Stop feeding on the affected side

- Stop feeding altogether
- Unsure / Don't know

19. Using a pump: Circle the statement that is most correct (Place an "x" within ONE box)

- Mothers who are separated from their babies after birth should express 3-4 times during the day and rest at night
- Mothers who are separated from their babies after birth should express 8-10 times in 24 hrs including at night.
- Mothers who are separated from their babies after birth should express 4 hourly including once at night
- Unsure / Don't know

20. If a mother complains of breastmilk insufficiency which of the following options are likely to help resolve the problem: (Place an "x" within ANY that apply)

- Increase frequency of breastmilk feedings
- Top up each breastfeed with a bottle of formula
- Assist in positioning and attachment
- Advise mother to drink more fluids
- Unsure / Don't know

21. Which is not a principal of good positioning (Place an "x" within ANY that apply)

- Baby should be in alignment
- Baby should be held in close
- Mother holds baby's head in her hand
- Nipple should be in line with the nose
- Unsure / Don't know

22. How would you recognize poor attachment: (Place an "x" within ANY that apply)

- Baby sucks first rapidly, then with deep sucks and pauses
- Mother is seen bringing baby to breast with baby's nose leading

- Baby has a wide open mouth and his chin is indenting the breast
- Feeding is comfortable and more areola is seen above the mouth than below
- Unsure / Don't know

23. Hand expressing: Which statement(s) is (are) correct: (Place an "x" within ANY that apply)

- It is only necessary if mothers cannot afford a pump
- It is difficult and painful to do
- It increases prolactin levels and improves lactation
- Colostrum is easier to hand express than electric pump expressing
- Unsure / Don't know

24. Why is skin to skin contact beneficial at birth? (Place an "x" within ANY that apply)

- Keeps baby and mother calm
- Baby's temperature is regulated
- Helps with breastfeeding
- Helps mothers feel guilty about formula feeding
- Unsure / Don't know

25. Skin to skin contact at birth. Which of these statements is/are correct? (Place an "x" within ANY that apply)

- Ideally it should not be interrupted until the baby breastfeeds
- It is unnecessary for mothers who wish to formula feed
- If the birth situation prevents immediate skin contact there is no point in doing it later on
- Unsure / Don't know

Original survey created by:

Scott, J. A., McInnes, R. J., Tapin, D., & Guthrie, E. (2003). *Breastfeeding opinions, knowledge, management practices and training of Scottish midwives*. Retrieved from <https://www.researchgate.net/project/Breastfeeding-opinions-knowledge-management-practices-and-training-of-Scottish-midwives>

Survey adapted by:

Kempenaar, L. E., & Darwent, K. L. (2013). The impact of peer support training on mothers' attitudes towards and knowledge of breastfeeding. *Maternal and Child Nutrition*, 9, 359-368.

Answers to Adapted Infant Feeding Questionnaire

Section A

For each of the statements **on the following two pages**, please indicate how much you agree or disagree by circling the number that most closely corresponds to your opinion. The number “1” indicates strong disagreement, whereas “5” indicates strong agreement.

	Strongly disagree				Strongly agree
1. * <i>R</i> Formula feeding is good way of letting fathers care for the baby	1	2	3	4	5
2. Breast milk is the ideal food for babies	1	2	3	4	5
3. * <i>R</i> A mother who occasionally drinks alcohol should not breastfeed her baby	1	2	3	4	5
4. * <i>R</i> Formula feeding is more reliable because you can calculate the exact quantity of milk the baby is getting	1	2	3	4	5
5. * <i>R</i> Mothers intending to breastfeed should expect sore nipples as a normal part of breastfeeding	1	2	3	4	5
6. * <i>R</i> Modern artificial baby milks are nutritionally equivalent to breastmilk	1	2	3	4	5
7. * <i>R</i> The benefits of breastmilk last only as long as the baby is breastfed	1	2	3	4	5
8. * <i>R</i> Formula is as healthy for an infant as breast milk	1	2	3	4	5
9. * <i>R</i> Breastfeeding is incompatible with working outside the home	1	2	3	4	5
10. A breastfed baby is likely to have fewer infections than a formula fed baby	1	2	3	4	5
11. Formula fed babies are more likely to be overfed than breastfed babies	1	2	3	4	5
12. Breastfeeding is beneficial to a mother’s health	1	2	3	4	5
13. * <i>R</i> Formula feeding is more convenient than breastfeeding	1	2	3	4	5
14. Breastmilk alone can satisfy most babies for approximately the first six months	1	2	3	4	5
15. * <i>R</i> I would be embarrassed if a mother breastfed their toddler in front of me	1	2	3	4	5
16. Breastfeeding is more convenient than formula feeding	1	2	3	4	5

	Strongly Disagree				Strongly agree
17. In general breastfed babies are healthier than formula fed babies	1	2	3	4	5
18. Mothers who formula feed miss one of the great joys of motherhood	1	2	3	4	5
19. *R Formula milk is more easily digested than breastmilk	1	2	3	4	5
20. *R Most mothers have insufficient breastmilk	1	2	3	4	5
21. Breastfeeding provides health benefits for infants that cannot be provided by formula	1	2	3	4	5
22. *R Formula feeding is the better choice if the mother plans to go out to work	1	2	3	4	5
23. *R In general, breastfed babies need a top up with supplementary formula feeds	1	2	3	4	5
24. *R Breastmilk is lacking in iron	1	2	3	4	5
25. Breastfeeding increases mother infant bonding	1	2	3	4	5
26. *R Breastfed babies need to be fed too often	1	2	3	4	5
27. *R Breastfed babies are more likely to be overfed than formula fed babies	1	2	3	4	5
28. *R Mothers who smoke should formula feed their babies	1	2	3	4	5
29. A woman who is fully breastfeeding is less likely to become pregnant three months after delivery than a woman who is formula feeding	1	2	3	4	5
30. *R A mother of a young infant who feels she has insufficient milk should “top up” with a bottle after each feed	1	2	3	4	5

Section B

For questions 1-7, please indicate how much you agree or disagree that the statement is correct by circling a number. The number “1” indicates strong disagreement, whereas “5” indicates strong agreement.

	Strongly disagree					Strongly agree
1. <i>*R</i> It is usually advisable for babies to receive a formula feed before the first breastfeed	1	2	3	4	5	
2. Frequent breastfeeding in the early newborn period can help reduce jaundice	1	2	3	4	5	
3. Growth patterns of breastfed infants differ from those of formula fed infants	1	2	3	4	5	
4. <i>*R</i> If a breastfed infant has not regained his birth weight by two weeks of age, the first intervention should be to discuss supplementing with formula	1	2	3	4	5	

5. How long should a mother breastfeed exclusively according to national guidelines (no juice, formula or solids)?

Answer: _____ **6 MONTHS* _____

6. At what age should infants who are being formula fed start solid foods according to national guidelines?

Answer: _____ **6 MONTH* _____

7. At what age should infants who are being breastfed start solid foods according to national guidelines?

Answer: _____ **6 MONTHS* _____

8. Giving glucose water is recommended after breastfeeding to help satisfy an infant until the mother's milk comes in (Circle ONE response)

YES

**NO*

UNSURE

9. A breastfeeding mother who is diagnosed as having mastitis should express her milk and throw it away for the first week of antibiotic treatment (Circle ONE response)

YES

**NO*

UNSURE

10. Glucose water helps to decrease the physiological jaundice often seen in breastfed babies (Circle ONE response)

YES

**NO*

UNSURE

11. If a healthy full term baby is not breastfed within 8 hours of birth he/she is at risk of hypoglycemia (Circle ONE response)

YES

**NO*

UNSURE

12. Glucose water is recommended to help the baby get rid of mucous before initiating breastfeeding? (Circle ONE response)

YES

**NO*

UNSURE

13. Sore nipples can be prevented by gradually increasing the number of minutes the infant is allowed to breastfeed on each side (Circle ONE response)

YES

**NO*

UNSURE

14. How do breastfed babies grow in weight compared to formula fed babies at 0-3 months of age: (Circle ONE response)

slower growth
know

same rate of growth

**faster growth*

Don't know

15. How do breastfed babies grow in weight compared to formula fed babies at 4-7 months of age: (Circle ONE response)

**slower growth*
know

same rate of growth

faster growth

Don't know

16. After a mother's breastmilk comes in, at least how many wet diapers should her newborn have per 24hrs? (Circle ONE response)

3-4,
know

5-6,

**7-8,*

9-10,

Don't know

17. Do you think that breastfeeding should be supplemented by: (Place an "x" within ONE box)

Offering water or glucose water or formula before initiating breastfeeding

Offering water, glucose water or formula after each breastfeeding

None of the above

18. If a woman develops mastitis, what is likely to be helpful in relation to breastfeeding? (Place an "x" within ONE box)

Continue to feed on both sides

- Stop feeding on the affected side
- Stop feeding altogether
- Unsure / Don't know

19. Using a pump: Circle the statement that is most correct (Place an "x" within ONE box)

- Mothers who are separated from their babies after birth should express 3-4 times during the day and rest at night
- Mothers who are separated from their babies after birth should express 8-10 times in 24 hrs including at night.
- Mothers who are separated from their babies after birth should express 4 hourly including once at night
- Unsure / Don't know

20. If a mother complains of breastmilk insufficiency which of the following options are likely to help resolve the problem: (Place an "x" within ANY that apply)

- Increase frequency of breastmilk feedings
- Top up each breastfeed with a bottle of formula
- Assist in positioning and attachment
- Advise mother to drink more fluids
- Unsure / Don't know

21. Which is not a principal of good positioning (Place an "x" within ANY that apply)

- Baby should be in alignment
- Baby should be held in close
- Mother holds baby's head in her hand
- Nipple should be in line with the nose
- Unsure / Don't know

22. How would you recognize poor attachment: (Place an "x" within ANY that apply)

- Baby sucks first rapidly, then with deep sucks and pauses
- Mother is seen bringing baby to breast with baby's nose leading
- Baby has a wide-open mouth and his chin is indenting the breast

- Feeding is comfortable and more areola is seen above the mouth than below
- Unsure / Don't know

23. Hand expressing: Which statement(s) is (are) correct: (Place an "x" within ANY that apply)

- It is only necessary if mothers cannot afford a pump
- It is difficult and painful to do
- It increases prolactin levels and improves lactation
- Colostrum is easier to hand express than electric pump expressing
- Unsure / Don't know

24. Why is skin to skin contact beneficial at birth? (Place an "x" within ANY that apply)

- Keeps baby and mother calm
- Baby's temperature is regulated
- Helps with breastfeeding
- Helps mothers feel guilty about formula feeding
- Unsure / Don't know

25. Skin to skin contact at birth. Which of these statements is/are correct? (Place an "x" within ANY that apply)

- Ideally it should not be interrupted until the baby breastfeeds
- It is unnecessary for mothers who wish to formula feed
- If the birth situation prevents immediate skin contact there is no point in doing it later on
- Unsure / Don't know

***R = Question is reverse coded**

Answers = bolded and italicized with asterisks in front or identified with "☒"

Original survey created by:

Scott, J. A., McInnes, R. J., Tapin, D., & Guthrie, E. (2003). *Breastfeeding opinions, knowledge, management practices and training of Scottish midwives*. Retrieved from <https://www.researchgate.net/project/Breastfeeding-opinions-knowledge-management-practices-and-training-of-Scottish-midwives>

Survey adapted by:

Kempenaar, L. E., & Darwent, K. L. (2013). The impact of peer support training on mothers' attitudes towards and knowledge of breastfeeding. *Maternal and Child Nutrition*, 9, 359-368.

Appendix E

Permission to Use Survey Instruments

Requesting Research Permission from Jane Scott

Tue, Aug 23, 2016 at 2:13 PM

Dear Donna, I am happy for you to use the questionnaire.

I have put the original Research project report and the questionnaire up on my research gate page. I just ask that you acknowledge the original report.

https://www.researchgate.net/profile/Jane_Scott

Good luck with your research. Best wishes, Jane

Jane Scott

PhD, MPH, Grad Dip Diet, BSc, Adv APD, FDAA

Requesting Research Permission from Kirsty Darwent

Tue, Jul 5, 2016 at 3:35 PM

Hi Donna We adapted our questionnaire from an original by Scott, which is in the references. We approached her directly to do this. I think a copy of the questionnaire is with the published paper? Happy for you to use our version K

Appendix F

Permission Letters to Conduct Study in Offices

RE: Permission to Conduct Research Study

Dear:

Dr. Joshua Polsky, Dr. Andrea Brkovich, and Dr. Angelina Chan

Dr. Rahi Victory - Victory Reproductive Care

Please accept this letter as a request to conduct a research study at your office. I am a Master of Science in Nursing student at the University of Windsor and am in the process of completing my thesis. The study is titled “The Effects of Introducing Prenatal Breastfeeding Education in the Obstetricians’ Waiting Rooms”.

According to G* Power analysis, this study requires 101 participants to be clinically significant. The outreach goal will be 150 participants to account for attrition. Those interested in participating in this study will need to complete three surveys, each estimated to take around 20 minutes to complete. The first survey will be completed prior to the education interventions are provided, the second survey will be completed after the educational intervention is completed, and the last survey will be completed at their postpartum follow up appointment. The study will maintain anonymity and confidentiality with the help of office staff and research assistants. The principal investigator will not be able to interact with the participants due to the risk of caring for them on the maternal newborn unit and to maintain anonymity and confidentiality.

This study will be conducted with no cost to the office or the individual participants. Please sign below if you are in agreement to the implementation of the study within your office.

Any questions or concerns can be directed to myself:
manlong@uwindsor.ca

Sincerely,
Donna Manlongat, RN, BScN
University of Windsor – Master of Science in Nursing student

Approved by:

Print your name and title here

Signature

Date

Appendix G

CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: The Effects of Introducing Prenatal Breastfeeding Education in the Obstetrician's Waiting Room

You are asked to participate in a research study conducted by Donna Manlongat, from the Faculty of Nursing at the University of Windsor in the thesis program.

If you have any questions or concerns about the research, please feel free to contact:

Donna Manlongat (Primary Researcher)

Dr. Kane (Faculty Advisor)

Phone: (519)253-3000 ext 7407

Phone: (519)253-3000 ext 2268

E-mail: manlong@uwindsor.ca

E-mail: dkane@uwindsor.ca

PURPOSE OF THE STUDY

This study is on the impact prenatal breastfeeding education has on breastfeeding rates, breastfeeding knowledge, and attitudes towards breastfeeding. Your experiences will give me feedback as to whether or not there is a need in the community to introduce breastfeeding information to pregnant women at a convenient time such as waiting for their OB appointment.

PROCEDURES

If you volunteer to participate in this study, you will be asked to complete paper surveys on demographic information, breastfeeding experience, breastfeeding attitude, and breastfeeding knowledge. The surveys will be handed out at three points in time: before the breastfeeding education is given, after the breastfeeding education is given, and at your six-week appointment with your OB doctor after you have had your baby. The breastfeeding information will be provided to you in a booklet, two separate phone applications, and Internet videos. Each survey will take an estimated 20 minutes to complete every time.

POTENTIAL RISKS AND DISCOMFORTS

There are no known economic or physical risks with participating. There may be psychological risks to participating in this study if you complete the educational materials and feel intimidated to breastfeed after. You may feel that completing the educational materials gives you social pressure to breastfeed and may experience negative emotions if you find yourself unable to breastfeed after you delivery your baby. You may run in to the main research person on the OB hospital unit as she also works there, however your confidentiality and anonymity will be maintained through the use of research assistants. If you decide to contact the researcher with questions over the study, it is your decision to disclose your name when you call or e-mail her.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

You may benefit in participating in this study by being able to get free breastfeeding education materials. The information you provide through your surveys will provide

input as to the effects breastfeeding education given in pregnancy have on breastfeeding rates, breastfeeding knowledge, and attitudes towards breastfeeding.

COMPENSATION FOR PARTICIPATION

Your participation in this research study will be helpful in collecting data concerning breastfeeding education in obstetrician's offices in the prenatal period, where literature is currently lacking. In exchange for participating in this study, you will be entered to win Babies'R'Us gift cards at the three points of data collection. Four gift cards valued at \$25 each will be drawn from the participants who complete the first questionnaire. The next set of four \$25 gift cards will be drawn from the participants who complete the second questionnaire. The last set of four \$25 gift cards will be drawn from the participants who complete the third questionnaire. Completing all three questionnaires will enter you in to win up to \$75 worth in Babies'R'Us gift cards. If your survey is excluded from the data analysis portion of the study due to certain circumstances that warrant doing so, you will be entered into the gift card draw to compensate you for your time. Winners will be required to answer an e-mail from research assistants within one week and provide an address to mail the gift card to. Only winners will be contacted. If the research assistants do not receive a reply within the week, another winner will be chosen.

CONFIDENTIALITY

Several steps will be taken to protect your anonymity and identity through the research study. The consent forms will be the only document that will contain your full name and identification code. You will create your own identification code for the questionnaires that will be unidentifiable to the primary researcher. The consent forms and questionnaires will be kept in separate locked files so that your answers cannot be tied to your identity when analyzing data. The only people that will have access to the raw data will be the research team, including research assistants. The principle investigator (main research person) intends to publish study findings, however your identity will remain confidential.

PARTICIPATION AND WITHDRAWAL

Participation in this research study is completely voluntary with the option to refuse answering any question that you are uncomfortable answering and still remain in the study. You may also withdraw out of the study at any point in time with no penalty. If you withdraw from the study, your responses up until your withdrawal point may be used in the research study. The researcher may withdraw you from this study if circumstances arise which warrant doing so.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

Results of this study will be made available after the researcher's graduation on the University of Windsor website: http://scholar.uwindsor.ca/nursing_etd/

SUBSEQUENT USE OF DATA

The data collected in this study may be used in future studies. The data may be published or presented to share study findings with others.

RIGHTS OF RESEARCH PARTICIPANTS

If you have questions or concerns regarding your rights as a research participant, contact:
Research Ethics Coordinator,
University of Windsor
Windsor, Ontario
N9B 3P4
Phone: (519)253-3000 ext. 3848
E-mail: ethics@uwindsor.ca

SIGNATURE OF RESEARCH PARTICIPANT/LEGAL REPRESENTATIVE

I understand the information provided for the study, **The Effects of Introducing Prenatal Breastfeeding Education in the Obstetrician’s Waiting Room**, as described above. I am satisfied with the answers to my questions and agree to participate in this study. I have received a copy of this form.

Identification Code = first two letters of maiden name, followed by the two numbers representing the day you were born and the two numbers representing your estimated day of birth of your newborn according to your first ultrasound. For example, a maiden name of Smith, birthday on January 01, 1985, and estimated due date of December 31, 2016, would be coded as SM0131.

Name of Participant

Identification Code

Signature of Participant

Date

Name of Parent (Required if participant is less than 18 years old and still lives with parent)

Signature of Parent

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct my research.

Signature of Investigator

Date

Please provide your e-mail address below if you would like to enter the Babies’R’Us draw. Fold this piece of paper and submit it into the locked box located in the waiting room. Every time your identification code is viewed on a survey, the research assistants will enter you into the draw for gift cards while still maintaining your anonymity from the main researcher.

Name of Participant

Identification Code

E-mail Address

**LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN
RESEARCH
(Survey Phase 1)**

Title of Study: The Effects of Introducing Prenatal Breastfeeding Education in the Obstetrician's Waiting Room

You are asked to participate in a research study conducted by Donna Manlongat, from the Faculty of Nursing at the University of Windsor in the thesis program.

If you have any questions or concerns about the research, please feel free to contact:

Donna Manlongat (Primary Researcher)	Dr. Kane (Faculty Advisor)
Phone: (519)253-3000 ext 7407	Phone: (519)253-3000 ext 2268
E-mail: manlong@uwindsor.ca	E-mail: dkane@uwindsor.ca

PURPOSE OF THE STUDY

This study is on the impact prenatal breastfeeding education has on breastfeeding rates, breastfeeding knowledge, and attitudes towards breastfeeding. Your experiences will give me feedback as to whether or not there is a need in the community to introduce breastfeeding information to pregnant women at a convenient time such as waiting for their OB appointment.

PROCEDURES

If you volunteer to participate in this study, you will be asked to complete paper surveys on demographic information, breastfeeding experience, breastfeeding attitude, and breastfeeding knowledge. The surveys will be handed out at three points in time: before the breastfeeding education is given, after the breastfeeding education is given, and at your six-week appointment with your OB doctor after you have had your baby. The breastfeeding information will be provided to you in a booklet, two separate phone applications, and Internet videos. Each survey will take an estimated 20 minutes to complete every time.

POTENTIAL RISKS AND DISCOMFORTS

There are no known economic or physical risks with participating. There may be psychological risks to participating in this study if you complete the educational materials and feel intimidated to breastfeed after. You may feel that completing the educational materials gives you social pressure to breastfeed and may experience negative emotions if you find yourself unable to breastfeed after you deliver your baby. You may run in to the main research person on the OB hospital unit as she also works there, however your confidentiality and anonymity will be maintained through the use of research assistants. If you choose to disclose yourself as a study participant to the primary researcher while in the hospital, she will continue to work within her role as a nurse and not as a researcher. If you decide to contact the researcher with questions over the study, it is your decision to disclose your name when you call or e-mail her.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

You may benefit in participating in this study by being able to get free breastfeeding education materials. The information you provide through your surveys will provide input as to the effects breastfeeding education given in pregnancy have on breastfeeding rates, breastfeeding knowledge, and attitudes towards breastfeeding.

COMPENSATION FOR PARTICIPATION

Your participation in this research study will be helpful in collecting data concerning breastfeeding education in obstetrician's offices in the prenatal period, where literature is currently lacking. In exchange for participating in this study, you will be entered to win Babies'R'Us gift cards at the three points of data collection. Four gift cards valued at \$25 each will be drawn from the participants who complete the first questionnaire. The next set of four \$25 gift cards will be drawn from the participants who complete the second questionnaire. The last set of four \$25 gift cards will be drawn from the participants who complete the third questionnaire. Completing all three questionnaires will enter you in to win up to \$75 worth in Babies'R'Us gift cards. If your survey is excluded from the data analysis portion of the study due to certain circumstances that warrant doing so, you will be entered into the gift card draw to compensate you for your time. Winners will be required to answer an e-mail from research assistants within one week and provide an address to mail the gift card to. Only winners will be contacted. If the research assistants do not receive a reply within the week, another winner will be chosen.

CONFIDENTIALITY

Several steps will be taken to protect your anonymity and identity through the research study. The consent forms will be the only document that will contain your full name and identification code. You will create your own identification code for the questionnaires that will be unidentifiable to the primary researcher. The consent forms and questionnaires will be kept in separate locked files so that your answers cannot be tied to your identity when analyzing data. The only people that will have access to the raw data will be the research team, including research assistants. The primary researcher intends to publish study findings, however your identity will remain confidential.

PARTICIPATION AND WITHDRAWAL

Participation in this research study is completely voluntary with the option to refuse answering any question that you are uncomfortable answering and still remain in the study. You may also withdraw out of the study at any point in time with no penalty. If you withdraw from the study, your responses up until your withdrawal point may be used in the research study. The researcher may withdraw you from this study if circumstances arise which warrant doing so.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

Results of this study will be made available after the researcher's graduation on the University of Windsor website: http://scholar.uwindsor.ca/nursing_etd/

SUBSEQUENT USE OF DATA

The data collected in this study may be used in future studies. The data may be published or presented to share study findings with others.

RIGHTS OF RESEARCH PARTICIPANTS

If you have questions or concerns regarding your rights as a research participant, contact:

Research Ethics Coordinator,

University of Windsor

Windsor, Ontario

N9B 3P4

Phone: (519)253-3000 ext. 3848

E-mail: ethics@uwindsor.ca

SIGNATURE OF RESEARCHER

These are the terms under which I will conduct my research.

Signature of Researcher

Date

Appendix H

LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN RESEARCH (Survey Phase 2)

Title of Study: The Effects of Introducing Prenatal Breastfeeding Education in the Obstetrician's Waiting Room

Thank you for participating in phase 1 of the research study conducted by Donna Manlongat, a student from the Faculty of Nursing at the University of Windsor in the thesis program.

If you have any questions or concerns about the research, please feel free to contact:

Donna Manlongat (Primary Researcher)	Dr. Kane (Faculty Advisor)
Phone: (519)253-3000 ext 7407	Phone: (519)253-3000 ext 2268
E-mail: manlong@uwindsor.ca	E-mail: dkane@uwindsor.ca

PURPOSE OF THE STUDY

This study is on the impact prenatal breastfeeding education has on breastfeeding rates, breastfeeding knowledge, and attitudes towards breastfeeding. Your experiences will give me feedback as to whether or not there is a need in the community to introduce breastfeeding information to pregnant women at a convenient time such as waiting for their OB appointment.

PROCEDURES

If you continue to participate in this study, this phase will require you to complete paper surveys on your breastfeeding attitude and breastfeeding knowledge. The survey will take an estimated 20 minutes to complete. Please complete the survey within this package and submit it in the locked box within the office or by mail. Completing the second survey constitutes ongoing consent in this study.

POTENTIAL RISKS AND DISCOMFORTS

There continues to be no known economic or physical risks with participating. There may be psychological risks to participating in this study if you complete the educational materials and feel intimidated to breastfeed after. You may feel that completing the educational materials gives you social pressure to breastfeed and may experience negative emotions if you find yourself unable to breastfeed after you deliver your baby. You may run in to the main research person on the OB hospital unit as she also works there, however your confidentiality and anonymity will be maintained through the use of research assistants. If you choose to disclose yourself as a study participant to the primary researcher while in the hospital, she will continue to work within her role as a nurse and not as a researcher. If you decide to contact the researcher with questions over the study, it is your decision to disclose your name when you call or e-mail her.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

You may benefit in participating in this study by being able to get free breastfeeding education materials. The information you provide through your surveys will provide input as to the effects breastfeeding education given in pregnancy have on breastfeeding rates, breastfeeding knowledge, and attitudes towards breastfeeding.

COMPENSATION FOR PARTICIPATION

In exchange for completing this survey, you will be entered into a draw to win one of four Babies 'R' Us gift cards valued at \$25 each. If your survey is excluded from the data analysis portion of the study due to certain criteria, you will be entered into the gift card draw to compensate you for your time. If your survey is excluded from the data analysis portion of the study due to certain circumstances that warrant doing so, you will be entered into the gift card draw to compensate you for your time. Winners will be required to answer an e-mail from research assistants within one week and provide an address to mail the gift card to. Only winners will be contacted. If the research assistants do not receive a reply within the week, another winner will be chosen.

CONFIDENTIALITY

The research team will continue to protect your anonymity and identity through the research study. The consent form is the only document that contains your full name and identification code. Your identification codes on the questionnaires remain unidentifiable to the primary researcher. The consent forms and questionnaires will continue to be kept in separate locked files so that your answers cannot be tied to your identity when analyzing data. The only people that continue to have access to the raw data are the research team members, including the research assistants. The primary researcher intends to publish study findings, however your identity will remain confidential.

PARTICIPATION AND WITHDRAWAL

Participation in this research study is completely voluntary with the option to refuse answering any question that you are uncomfortable answering and still remain in the study. You may also withdraw out of the study at any point in time with no penalty. If you withdraw from the study, your responses up until your withdrawal point may be used in the research study. The researcher may withdraw you from this study if circumstances arise which warrant doing so.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

Results of this study will be made available after the researcher's graduation on the University of Windsor website: http://scholar.uwindsor.ca/nursing_etd/

SUBSEQUENT USE OF DATA

The data collected in this study may be used in future studies. The data may be published or presented to share study findings with others.

RIGHTS OF RESEARCH PARTICIPANTS

If you have questions or concerns regarding your rights as a research participant, contact:

Research Ethics Coordinator,

University of Windsor

Windsor, Ontario

N9B 3P4

Phone: (519)253-3000 ext. 3848

E-mail: ethics@uwindsor.ca

SIGNATURE OF RESEARCHER

These are the terms under which I will conduct my research.

Signature of Researcher

Date

**LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN
RESEARCH
(Survey Phase 3)**

Title of Study: The Effects of Introducing Prenatal Breastfeeding Education in the Obstetrician's Waiting Room

Thank you for participating in phases 1 and 2 of the research study conducted by Donna Manlongat, a student from the Faculty of Nursing at the University of Windsor in the thesis program.

If you have any questions or concerns about the research, please feel free to contact:

Donna Manlongat (Primary Researcher)	Dr. Kane (Faculty Advisor)
Phone: (519)253-3000 ext 7407	Phone: (519)253-3000 ext 2268
E-mail: manlong@uwindsor.ca	E-mail: dkane@uwindsor.ca

PURPOSE OF THE STUDY

This study is on the impact prenatal breastfeeding education has on breastfeeding rates, breastfeeding knowledge, and attitudes towards breastfeeding. Your experiences will give me feedback as to whether or not there is a need in the community to introduce breastfeeding information to pregnant women at a convenient time such as waiting for their OB appointment.

PROCEDURES

If you continue to participate in this study, this phase will require you to complete paper surveys on your breastfeeding experience, breastfeeding attitude and breastfeeding knowledge. The survey will take an estimated 20 minutes to complete. Please complete the survey within this package and submit it in the locked box within the office or by mail. Completing the third survey constitutes ongoing consent in this study.

POTENTIAL RISKS AND DISCOMFORTS

There continues to be no known economic or physical risks with participating. There may be psychological risks to participating in this study if you complete the educational materials and feel intimidated to breastfeed after. You may feel that completing the educational materials gives you social pressure to breastfeed and may experience negative emotions if you find yourself unable to breastfeed after you deliver your baby. You may run in to the main research person on the OB hospital unit as she also works there, however your confidentiality and anonymity will be maintained through the use of research assistants. If you choose to disclose yourself as a study participant to the primary researcher while in the hospital, she will continue to work within her role as a nurse and not as a researcher. If you decide to contact the researcher with questions over the study, it is your decision to disclose your name when you call or e-mail her.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

You may benefit in participating in this study by being able to get free breastfeeding education materials. The information you provide through your surveys will provide

input as to the effects breastfeeding education given in pregnancy have on breastfeeding rates, breastfeeding knowledge, and attitudes towards breastfeeding.

COMPENSATION FOR PARTICIPATION

In exchange for completing this survey, you will be entered into a draw to win one of four Babies 'R' Us gift cards valued at \$25 each. If your survey is excluded from the data analysis portion of the study due to certain criteria, you will still be entered into the gift card draw to compensate you for your time. If your survey is excluded from the data analysis portion of the study due to certain circumstances that warrant doing so, you will be entered into the gift card draw to compensate you for your time. Winners will be required to answer an e-mail from research assistants within one week and provide an address to mail the gift card to. Only winners will be contacted. If the research assistants do not receive a reply within the week, another winner will be chosen.

CONFIDENTIALITY

The research team will continue to protect your anonymity and identity through the research study. The consent form is the only document that contains your full name and identification code. Your identification codes on the questionnaires remain unidentifiable to the primary researcher. The consent forms and questionnaires will continue to be kept in separate locked files so that your answers cannot be tied to your identity when analyzing data. The only people that continue to have access to the raw data are the research team members, including the research assistants. The primary researcher intends to publish study findings, however your identity will remain confidential.

PARTICIPATION AND WITHDRAWAL

Participation in this research study is completely voluntary with the option to refuse answering any question that you are uncomfortable answering and still remain in the study. You may also withdraw out of the study at any point in time with no penalty. If you withdraw from the study, your responses up until your withdrawal point may be used in the research study. The researcher may withdraw you from this study if circumstances arise which warrant doing so.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

Results of this study will be made available after the researcher's graduation on the University of Windsor website: http://scholar.uwindsor.ca/nursing_etd/

SUBSEQUENT USE OF DATA

The data collected in this study may be used in future studies. The data may be published or presented to share study findings with others.

RIGHTS OF RESEARCH PARTICIPANTS

If you have questions or concerns regarding your rights as a research participant, contact:
Research Ethics Coordinator,
University of Windsor
Windsor, Ontario
N9B 3P4

Phone: (519)253-3000 ext. 3848
E-mail: ethics@uwindsor.ca

SIGNATURE OF RESEARCHER

These are the terms under which I will conduct my research.

Signature of Researcher

Date

Appendix I

Why is breastfeeding important?

Breastfeeding is good for babies in many ways. It protects them from diseases and promotes optimal growth, health and development.

It also protects against obesity. Breastfeeding reduces the risk of being obese later in life by four per cent for each additional month up to eight months of age. Exclusive breastfeeding is particularly important for the first six months, a critical period in early childhood development that strongly influences longer term health outcomes.

Useful information:

Health Care Connect
<http://www.health.gov.on.ca/en/ms/healthcareconnect/public/>

Healthy Babies Healthy Children
<http://www.children.gov.on.ca/htdocs/English/topics/earlychildhood/health/index.aspx>

Best Start
<http://www.beststart.org/>

Service Ontario
<http://www.ontario.ca/serviceontario>

Ontario Benefits Directory
<http://www.gov.on.ca/en/residents/benefitsdirectory/index.htm>

Public Health Unit
<http://www.health.gov.on.ca/en/common/system/services/phu/locations.aspx>

Government of Ontario information:
www.health.gov.on.ca
INFOline 1-866-801-7242
TTY 1-800-387-5559

Telehealth Ontario: 1-866-797-0000
TTY 1-866-797-0007

Telehealth Ontario 24/7 Breastfeeding Supports

Learn about the supports that are available to new and expectant moms simply by calling:

1-866-797-0000 or
TTY : 1-866-797-0007



What services are being provided by Telehealth?

New and expectant moms now have access to expert advice and support for breastfeeding 24 hours a day, 7 days a week, through a telephone advisory service.

This free service is provided by Registered Nurses who've also received training in breastfeeding and lactation support. For more complex situations, lactation experts will also be available.

The service is provided in English and French with 24/7 access to telephone interpreters in more than 100 languages and a direct TTY number for those with hearing and speech difficulties.

Who can use the service?

The service is free and available to all new and expectant moms that have questions related to breastfeeding their child.

Family, friends and caregivers who are supporting new and expectant moms are also encouraged to call should assistance be required.

When is the service available?

The service is available starting April 1, 2014 24 hours a day, 7 days a week.

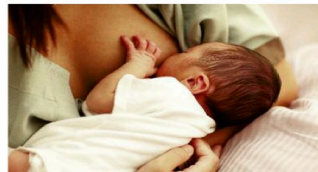
What is Telehealth Ontario?

Telehealth Ontario is a free, confidential telephone service offering health advice or general health information by Registered Nurses.

That means quick, easy access to a qualified health professional, who can assess symptoms and help determine the best first step.

What is the number to call?

1-866-797-0000
TTY : 1-866-797-0007



Appendix J

Educational Breastfeeding Materials

There are three types of resources available to you, which you can complete at home or within the office. Please ask the research assistants that are available to you as to where these materials can be found within the office.

Reading Material

The Breastfeeding Matters booklet is available in a variety of languages: English, French, Arabic, Bengali, Chinese (simplified), Farsi, Gujarati, Hindi, Korean, Punjabi, Russian, Serbian, Somali, Spanish, Tamil, Tagalog, Urdu, and Vietnamese (Health Nexus, 2014). It reviews the importance of breastfeeding, tips on initiating and maintaining breastfeeding, how to store breast milk, and frequently asked questions (Health Nexus, 2014).

To review The Breastfeeding Matters booklet at home, you may download a PDF version in any language at:

<http://www.beststart.org/cgi-bin/commerce.cgi?preadd=action&key=B04-E>

Videos

The **Region of Peel breastfeeding instructional videos** provides visual illustrations to the importance of breastfeeding. Topics within these videos include initiating breastfeeding, the importance of skin-to-skin contact, obtaining a proper latch, the different breastfeeding positions, milk production and supply/demand concept, answers to commonly asked questions, and breastfeeding tips after a cesarean section (Peel Public Health, 2016). These videos are available in a variety of languages: English, French, Mandarin, Punjabi, Spanish, Urdu, and Vietnamese (Peel Public Health, 2016).

To review the Region of Peel breastfeeding instructional videos at home, please view the following website:

<http://www.peelregion.ca/health/family-health/breastfeeding/resources/video/>

Phone Applications

The **When You Need It (WYNI) app** reviews the importance of breastfeeding, provides an introduction to breastfeeding, describes proper storing of breast milk, troubleshoots breastfeeding problems, and explains when and where to get help (WECHU, 2015). This phone application is available for Apple and Android products (WECHU, 2015). The **Mom and Baby To Be (M+B 2B) app** is available for Apple products containing preconception, prenatal, and postpartum education (Niagara Region, n.d.). The breastfeeding education provided through this phone application includes initiating breastfeeding, breastfeeding positions, milk supply, supplementation, pumping, and family/friend support (Niagara Region, n.d.).



VOLUNTEERS NEEDED FOR RESEARCH ON BREASTFEEDING KNOWLEDGE



Volunteers are needed to participate in a study of different styles of breastfeeding education and the impact it has on women's decisions to breastfeed, their feelings towards breastfeeding, and their breastfeeding experiences.

You will be asked to complete a survey three times:

- ✓ **Prior to receiving breastfeeding education**
- ✓ **After receiving breastfeeding education**
- ✓ **At your 6 week OB appointment after your baby is born**



In appreciation of your time, you will be entered into a Babies "R" Us gift card draw (\$25) after each survey is completed.

If you are interested, please pick up an information letter from a research assistant.

This study has received clearance from the University of Windsor Research Ethics Board. If you have any concerns in regards to this research please contact them by: Phone (519) 253-3000 ext. 3948 or Email ethics@uwindsor.ca

Appendix L

Research Assistants Script

Phase #1 in Waiting Room:

Hello, my name is _____ and I am a third year nursing student volunteering as a research assistant for this study (show participants recruitment flyer). Volunteers are needed to participate in breastfeeding research. On your part, it would require you to complete a survey at three different points in time. To compensate you for this time you would be entered into a Babies 'R' Us gift card draw after every survey phase to potentially win up to \$75 in gift cards. If you are interested in hearing more about this study please let me know and we can discuss this further in a private area.

Phase #1 in Private Room:

Thank you for your interest. I would like to ask you some questions to determine if you meet the criteria to be included into this study.

Are you:

- Over the age of 16
- Planning to give birth in the hospital
- No adoption involvement
- No CAS involvement (including an apprehension)
- Able to read English (or Care Partner available to translate consents and surveys)
- Minimal third trimester

YES to all of the above: Congratulations, you meet the criteria to participate in this study. Please read over this "Letter of Information for Consent to Participate in Research". (Give them a few minutes to read over the informational letter.) Do you have any questions about this study? Some points I would like to highlight are:

- Please remember to complete both front and back of the surveys.
- Please remember to fill out your personal ID codes at the end of each survey if you would like them torn off and entered into the gift card draws.
- You can withdraw from the study at any point, however all submitted surveys will be used in the research study. If the researcher excludes your survey from the data analysis portion due to certain circumstances, you will still be entered into the gift card draw to compensate you for your time.
- Winners will be given a week to respond to their email, if not another winner will be chosen. Those who do not win will not be contacted.
- You will be given the opportunity to complete the pre-intervention and post-intervention surveys. Depending on your delivery date, you may be able to complete the 6-week postpartum survey, however data collection on our side ends April 30th.
- If you have any other questions, please feel free to contact the researcher. Please keep in mind the primary researcher is a staff nurse on the Family Birthing Centre, it is

your decision if you would like to disclose your name to her through your phone call or e-mail.

Obtain a signature for consent once participant feels comfortable and there are no further questions. Provide the participant with a copy of the consent letter. Inform them the secretarial staff will hand them phases 2 and 3 of the study.

NO to the criteria above: Thank you again for your interest. Unfortunately not all study criteria has been met. Please accept this information sheet on how to access the breastfeeding education materials at home.

Appendix M

Secretarial Staff Script

Phase #2 upon Registration:

Here's part two out of your three surveys for the breastfeeding study. Instructions are inside.

Phase #3 upon Registration:

Here's your last survey for the breastfeeding study. Instructions are inside.

Please Note: Postpartum surveys will have a removable post-it note on top of every envelope to remind secretaries to withhold handing out to surveys to those who delivered a stillborn. The note will state, "Please do not administer to postpartum women unless outcome of live birth."

Appendix N

Formula Supplementation Flow Chart and Policy

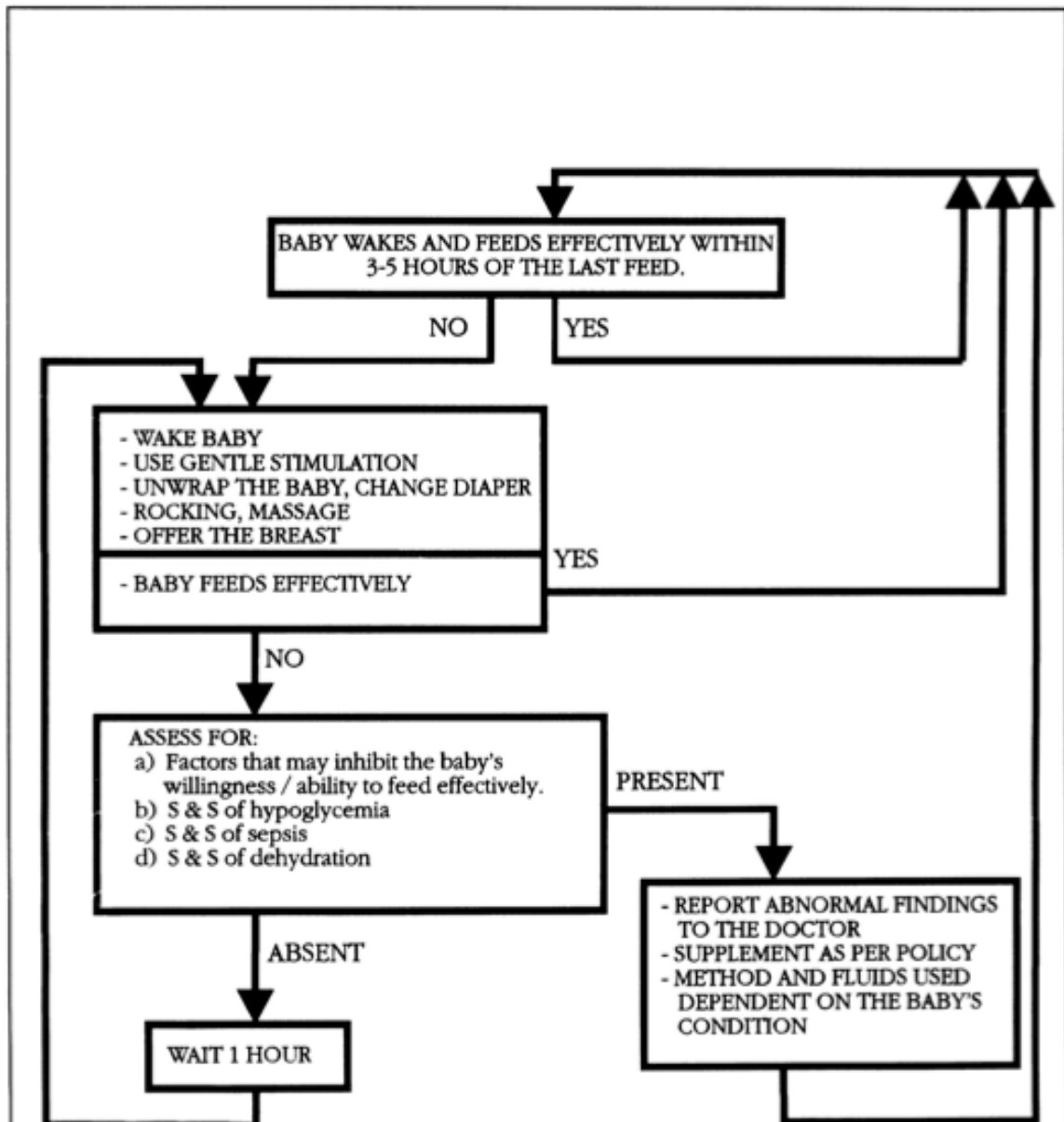


Figure 1. Breastfeeding Flow Chart.

Conditions:

1. Baby has been assessed and found to be healthy.
2. Rooming-in is encouraged.
3. Mother is taught to watch baby for feeding cues, understanding that crying is often a late cue.
4. Supplementation without indication may impact negatively on the breastfeeding outcome.
5. With correct management, few babies require supplementation.

Figure 2. Supplementation Policy.

- 1.1 Breastfed infants are to receive supplementation only in the following situations:
 - a. Medical conditions:
 1. Asymptomatic hypoglycemia as per unit policy and procedure Blood Glucose Monitoring (Note: symptomatic hypoglycemia is considered a paediatric emergency)
 2. Fluid depletion—baby has fever, poor skin turgor, decreased urinary output (Note: the possibility of sepsis must be ruled out)
 3. Caloric depletion—weight loss >10 percent of birth weight and the rate of loss not decreasing with increasing breastfeeding frequency and improved technique
 - b. The infant is not feeding effectively based on a thorough feeding assessment.
 - c. Supplementation is requested by the mother after being advised of the potential negative consequences of unnecessary supplementation.
- 2.1 Whenever possible, the mother's expressed breastmilk will be used.
- 3.1 Supplementation will be done at the breast, by finger feeding or by cup feeding unless those methods are contraindicated or declined by the mother.
- 4.1 Supplementation for >24 hours requires medical assessment.

VITA AUCTORIS

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