BREASTFEEDING SUPPORT AND HOW IT INFLUENCES BREASTFEEDING RATES

A thesis submitted to the
Kent State University College
of Education, Health, and Human Services
in partial fulfillment of the requirements
for the degree of Masters of Science

By
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The purpose of this study was to find descriptive data and determine if there is a relationship between breastfeeding support and breastfeeding mechanisms. This study will help to understand how a mother is given support during or post pregnancy. The mothers that were administered surveys ages 22-39 (n=38) through a convenience sample were found through local hospitals, support groups, neonatal intensive care unit, and a private lactation consultant. Means, standard deviations and a Chi-square test of association was done to find relationship. There was significance (p<0.001) in method of delivery and separation from infant after birth. The mothers ranked the spouse and lactation consultant as most important to breastfeeding support compared to other sources. This leads to increased need of breastfeeding support from other sources along with enabling spouse and lactation support to be much stronger.
ACKNOWLEDGEMENTS

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Lastly I would like to thank my significant other Cliff Zimmerman for his undivided attention, support and love during graduate school and my thesis. You have helped me in more ways than I could have asked for and I do not know how to ever thank you.
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CHAPTER I
INTRODUCTION

In the United States the 2010 breastfeeding rates, 16.4% of mothers were exclusively breastfeeding at six months, and 27% of infants were breastfed to twelve months (Breastfeeding Report Card, 2014). The goals of Healthy People 2020 believe that it is important that 25% of infants should be exclusively breastfed at six months and 34% of infants should be breastfed at twelve months (Healthy People, 2014). Breastfeeding mothers are not meeting the goals of the American Academy of Pediatrics to exclusively breastfeed for the first six months of life and to breastfeed with complimentary foods for the first twelve months (Pediatrics Breastfeeding, 2014).

Negative infant health outcomes can be greatly decreased when the duration of breastfeeding is at an optimal length of time. Poor health outcomes that can affect a child within the first year of life if not breastfed include increased infant mortality, gastrointestinal illness and respiratory illnesses. The long term effects of a failure to breastfeed can include increased risks of childhood obesity, incidence of Type 1 and 2 diabetes mellitus, and gastrointestinal disorders (Newburg et. al, 1998; Pediatrics, 2012; Stuebe, 2009). Maternal health outcomes from not breastfeeding can include increased risk of postpartum depression, increased risks of metabolic disorders and increased risk of cardiovascular disease. There can also be increased risk of poor long-term health outcomes such as ovarian and breast cancers that can be related to the lower rates of breastfeeding and shorter durations of breastfeeding in women. There also is strong
correlation between lactation and the decrease in postpartum depression (Eidelman & Schanier, 2012).

Breastfeeding has been shown to have a positive correlation in reducing diseases in an infant’s life. The effects of breastfeeding in infants can help prevent adverse health outcomes for the entirety of their lifespan. For exclusively breastfed infants there are short term benefits, such as the decreased of incidence of otitis media, infectious morbidity, lower risk of respiratory infections, gastro intestinal infections, Necrotizing Enterocolitis, Sudden infant death syndrome (SIDS), atopic dermatitis, and asthma are just handful of medical problems (Stuebe, 2009). Rate of infant mortality has shown to decrease in infants that breastfeed. There is also a significant increase in cognitive development in infants through adolescence that are breastfed (Dewey, Cohen, Brown & Rivera, 2000). There is also a decrease in long term risks with breastfeeding such as reducing the incidence of Type 1 or type 2 diabetes mellitus, childhood cancers, obesity and metabolic disorders (Eidelman & Schanier, 2012). Childhood obesity alone has increased in children from 7 % in 1980 to 18% in 2010, and breastfeeding has been shown to reduce this incidence (Childhood Obesity Facts, 2013).

Breastfeeding can be successful in different ways, but support that a mother receives can be essential to success. Support from a spouse, family members, clinician support, social support and employer support can be crucial in determining the duration of breastfeeding. The role of the partner or the father of the child, plays in the support of a breastfeeding mother is crucial in the initiation and duration of breastfeeding (Ingram,
Educating the partner or spouse on the importance of breastfeeding may help increase breastfeeding rates greatly. There are a large amount of baby friendly hospitals that can help in the promotion and support of breastfeeding. The institution must be committed to focus on breastfeeding and the importance for the infant (Merewood, Philipp, Chawla & Cimo, 2003). This focus on breastfeeding would involve the participation of physicians, nurses, lactation consultants and dietitians. The primary care group can have an essential role in the initiation of breastfeeding (Merewood, Philipp, Chawla & Cimo, 2003). The support increases the ability to track breastfeeding rates, as well as a stronger understanding of how different methods of support benefit mothers and infants.

The support system around the mother is especially important until six weeks postpartum (Ingram, Johnson & Greenwood, 2002). The support given to the mother is extremely important in the decision to breastfeed and the duration of breastfeeding (Raj & Plichta, 1998). The support from a clinician is crucial to mothers that are breastfeeding. Taveras, Capra, Braveman, Jensvold, Escobar and Lieu (2003), found that women who received clinician support were less likely to discontinue breastfeeding at twelve weeks. The support that a breastfeeding mother receives from their social surroundings can also encourage the mother to continue to breastfeed for a longer duration. The maternal grandmother giving support or the mother being exposed to a social influence of breastfeeding can aide in the overall decision to breastfeed (Raj & Plichta, 1998).
Statement of the Problem

The current measures of breastfeeding are somewhat poor due to how the data is collected in the United States. Many states get an understanding of how many women breastfeed and the duration is from state surveys, discharge surveys from hospitals, local WIC’s, immunization surveys and Ross- Labs surveys (Mcdowell, Wang, Kennedy-Stephenson, 2008; Wright, 2011; Li, Rock & Grummer-Strawn, 2007). These methods are somewhat biased at times, and do not show an accurate number because mothers underreport breastfeeding duration and fail to report when complementary foods are added to the infants diet. The poor data that is currently available does not give an acceptable idea of how breastfeeding support is affecting rates if at all.

There is a need for an increase in breastfeeding support for women prenatally, during pregnancy, and postpartum. Support can be given in many different ways and in different settings to mothers. A large amount of discussion centers on when to initiate breastfeeding support and why breastfeeding is not being discussed more. Breastfeeding rates are low because of poor support from multiple people that interact with the mother. The support that a mother is given postpartum is poor from physicians, pediatricians and other medical staff. The Academy of Nutrition and Dietetics position on promoting breastfeeding should be majorly based on the social factors that are involved with breastfeeding (James & Dobson, 2005). There are various ways to increase the breastfeeding support and to identify the support networks that are surrounding the mother that are most influential (James & Dobson, 2005). Involving family members,
the spouse and friends, with the breastfeeding education can significantly increase the likelihood of breastfeeding (James & Dobson, 2005).

**Purpose Statement**

The purpose of this study was to find descriptive data and determine if there is a relationship between breastfeeding support and breastfeeding mechanisms.

This study will help to understand how a mother is given support during or post pregnancy. This will lead to a greater knowledge and when to intervene with education and support. The study will show what type of breastfeeding support can be most influential and how the mother is affected.

**Operational Definitions**

- **Breastfeeding Success**: a mother that has initiated breastfeeding and met the American Academy of Pediatrics recommendations of exclusively breastfeeding for six months and breastfeeding with complimentary foods for at least twelve months.

- **Healthy People 2010**: the Centers for Disease Controls breastfeeding goals for 2010. The objective to increase the proportion of mothers who breastfeed in the United States (U.S. Breastfeeding, 2014).
  - 40% to exclusively breastfeed for three months
  - 17% to exclusively breastfeed for six months
  - 50% to breastfeed at six months
  - 25% to breastfeed at twelve months
• Healthy People 2020: the Centers for Disease Controls breastfeeding goals to meet by 2020. The objective is to increase the proportion of mothers that breastfeed in the United States (U.S. Breastfeeding, 2014)
  o 46% to exclusively breastfeed through three months
  o 25% to exclusively breastfeed through six months
  o 60% to breastfeed at six months
  o 34% to breastfeed at twelve months

• Baby Friendly Hospital Initiative (BFHI): a global program launched by the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) in 1991. The initiative to encourage hospitals and birthing centers that offer an optimal level of care for infant feeding and mother and infant bonding. The initiative is to help hospitals implement the Ten Steps to Successful Breastfeeding and the International Code of Marketing of Breast-milk Substitutes. The BFHI provides hospitals with the correct tools to give mothers information, confidence and skills to successful initiate and continue breastfeeding or feeding formula safely (Baby-Friendly USA, 2014).
CHAPTER II

REVIEW OF LITERATURE

Breastfeeding Recommendations

The recommendations of breastfeeding from the American Academy of Pediatrics (2014) are; an infant should be exclusively breastfed for the first six months of life with the introduction of complimentary foods after six months of age with the continuation of breastfeeding until twelve months of age.

Physiology of Lactation

Onset of Maturation/Breast Development

The maturation of breast tissue begins in the early stages of life in puberty with the hormone release of estrogen. When estrogen is released there is ductal extension of mammary gland and lobular development occurs (Lawrence & Lawrence, 2011). The ductal growth in the breast begins and leads to alveolar development after the onset of menses. Alveolar development occurs within twelve to eighteen months after menarche. While alveolar development is occurring fibrous and fatty tissues form around the ducts leading to anatomical development (Brown, 2011).

Lactogenesis I

The milk’s formation begins with pregnancy occurring in the third trimester of pregnancy or at twelve weeks. This is the first stage of lactogenesis beginning at about sixteen weeks of pregnancy. The process is initiated when human placental lactogen and prolactin are increased by the pregnancy. The hormone prolactin is necessary for the
development of the alveolar glands. During pregnancy prolactin and other protein hormones act on the receptors for the initiation of milk secretion. In the second trimester of pregnancy the anterior pituitary gland will begin to stimulate to production of colostrum although, the mother will not deliver for some time (Lawrence & Lawrence, 2011). During this stage of pregnancy the hormone prolactin-inhibitors prevent the breasts from starting the production of milk. This stage of lactatogenesis will extend through the delivery to the first few days of postpartum (Brown, 2011). As the human milk matures and continues to the second stage of lactogenesis the concentration of sodium to potassium ratio decreases and the amount of lactose increases (Ballard & Morrow, 2013).

**Lactogenesis II**

The second stage of lactogenesis occurs two to five days after giving birth. There is an increase in the blood flow oxygen and glucose to the mammary gland and the copious milk secretion occurs (Brown, 2011). The first milk that is secreted from the breast consists of a yellowish thick fluid called colostrum (Lawrence & Lawrence, 2011). When the infant is born and begins to suckle there is an increase in the secretion of prolactin and oxytocin to aide in the synthesis of milk. The main role of oxytocin is to assist in the letdown or the ejection of milk from the glands (Brown, 2011). The composition of the milk during this period of lactogenesis begins to change at day ten of postpartum to then go on to lactogenesis III.
Lactogenesis III

This stage begins at day ten of postpartum and the composition of mothers milk is stable (Brown, 2011). Lactogenesis III phase is when the mother begins to produce mature milk. The milk will meet full maturity by week five and six of postpartum (Ballard & Morrow).

Hormone Regulation

The hormones that have a key role in breastfeeding are imperative during and after delivering the infant. Hormones are released differently when the infant is delivered either by vaginal or natural birth or when there is a cesarean section (C-Section).

Hormones during Pregnancy

The releases of hormones after delivery are influential to begin breastfeeding. But during pregnancy the hormones prolactin, human placental lactogen (hPL) and human growth hormones (hGH) are mainly recognized in the lactogenic process. In pregnancy there is a rise in prolactin and hPL which rise together simultaneously. The concentration of hPL continues to rise during gestation and there is a sudden decrease after birth. The role of hPL has been associated with lactogenic action and important as a binding site of proteins and hGH. The production of prolactin and hGH noticeably increase during the end of gestation. There is an increase in concentration of prolaction and begin to take over hGH (Lawrence & Lawrence, 20...
**Hormones after Delivery**

The hormones that are present during pregnancy to start lactogenesis continue through postpartum. After giving birth the stimulation or suckling of the infant cause an increase in plasma hGH and prolactin. The release of milk is also controlled by the release of oxytocin to allow for the let down of milk ejection (Lawrence & Lawrence). The release of oxytocin can begin during delivery: women who have vaginal delivery have a higher spike of oxytocin release compared to women that had a caesarean section (Uvnas-Moberg, 1998). The release of oxytocin post vaginal and caesarean delivery is compared in Figure 1 (Uvnas-Moberg, 1998).

*Figure 1. Oxytocin Levels after Giving Birth. Oxytocin levels (pmol/l) in response to*
breastfeeding in individual women after (a) vaginal delivery or (b) after caesarean section (Nissen et. al., 1996). At ‘0’ the infant started sucking the breast.

This comparison of deliveries shows the spike when the infant begins to suckle and the higher amounts of oxytocin are produced in the vaginal delivery.

**Contact after Delivery**

The effects of oxytocin and prolactin are also present when the mother has skin-to-skin contact after delivery. The effects of prolactin and oxytocin are present when the mother’s breast is stimulated by suckling to assist in the ejection of milk. The release of oxytocin can also be induced by sensory pathways such as tactile, visual, olfactory and auditory stimulants. After the mother delivers the infant it is imperative for the infant to maintain contact with the mother. The effects of skin-to-skin contact are essential for the initial latching to breast. An infant that latches after delivery will get milk much easier than an infant that does not latch well (Newman, 2009). Sosa et. al., (1976) found mothers that had early contact with infant were 50% more likely to breastfeed for a longer duration than mothers with little contact with the infant. The contact with the infant can also aid in a better latch initially which can reduce soreness and pain within the first few days postpartum. The recommendation of early skin-to-skin contact to improve breastfeeding is to have contact for the first hour after birth and initiate breastfeeding (Newman, 2009).
Breast Milk Composition

The properties of breastmilk are in the actual composition and provide the optimal nutrition for the infant. Human milk has the best balance of nutrients for the newborn infant and can meet the growth and development for the best outcomes. According to Brown (2011), “human milk is isomotic (of similar ion concentration; in this case human milk and plasma are of similar ion concentration), this will allow the infant to need no other source of supplementation.” Human milk also provides a protective immunological effect for the infant (Brown, 2011). These immunoglobins include macrophages, neutrophils, T-lymphocytes, B-lymphocytes, epithelial cells and Immunoglobulin-A (Brown, 2011). The immunoglobins protect the infant and aid in growth of antibodies for protection. The antibodies that are found in mother’s milk can also serve many different functions to help the infant grow. In a meta-analysis, Chien and Howie found, that infants that were fed formula or a mixture of formula and breast milk were more likely to have a gastrointestinal infection than those infants that were exclusively breastfed (Chien & Howie, 2001).

Colostrum

Prolactin and oxytocin are released to begin lactation. Colostrum is the first fluid that is produced by the mother which is low in quantity but very dense in nutrients this stage is often the first few days after birth (Ballard & Morrow, 2013). Colostrum is thick yellow milk that is expressed within the first week of postpartum. The colostrum is higher and proteins and low in carbohydrates and fats compared to mature milk. The
colostrum that is expressed is not signaled by suckling by the infant. The release of colostrum is to empty the breast of milk to allow for the mature milk to then come in (Lawrence & Lawrence, 2011). The major components of the colostrum are secretory IgA (immunoglobulin A), lactoferrin, leukocytes and epidermal growth factors (Ballard & Morrow, 2013). The composition of colostrum is often thick to coat the infant’s gastrointestinal tract to prevent the growth of pathogens (Brown, 2011). The colostrum’s micronutrient composition is often much different than later stages of milk production. The concentration of sodium, chloride, magnesium levels are higher, and potassium, calcium and lactose are lower (Ballard & Morrow, 2013). The second stage of lactation occurs after the first few days of postpartum, after most of the colostrum has decreased (Ballard & Morrow, 2013).
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<tr>
<td>Serine</td>
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*Figure 2. Breastmilk Compared to Cow’s Milk (Brown, 2011)*
Health Benefits to Breastfeeding

Health Benefits to Mother

Hormones That Help Mother

The benefits of breastfeeding for the mother begin after birth when hormones begin to change. One of the significant hormones that help the mother is oxytocin. The stimulation of suckling increases the oxytocin to aide in the ejection of milk and the letdown. The oxytocin release also stimulates the contraction of the uterus, which will facilitate the uterus back to its normal size (Brown, 2011).

Prolactin, another hormone secreted during lactation, is related to lactation amenorrhea, which acts as a contraceptive to space pregnancies farther apart. The longer duration of breastfeeding and stimulation by the infant the higher the prolactin levels are which prolong the time of amenorrhea (Simpson-Herbert & Huffman, 1981). The duration of amenorrhea can vary between cultures and societies. In western societies the duration of amenorrhea averages to about six months, in some rural society’s amenorrhea can last up to eighteen months (Simpson-Herbert & Huffman, 1981). The outcome of prolonged amenorrhea gives longer periods of time between pregnancies although it should not be used a major form of contraceptive. In a meta analysis by Conde-Augdelo, Rosas-Bermudez, & Kafery-Goeta (2006), authors found that the spacing of pregnancies can affect maternal health outcomes such as higher maternal mortality, third trimester bleeding, early rupture of membranes, puerperal endometritits and anemia. In a study
by King (2003), described that women with close interval pregnancies less than six months apart had higher risks in pregnancy.

If the mother breastfeeds for a longer period of time she will possibly remain in amenorrhea for a longer period of time. However, the longer period of time of amenorrhea induced by prolactin can be important in certain populations where contraceptives are not available to space pregnancies.

**Maternal Weight Loss**

According to several studies maternal weight loss can be affected by breastfeeding in the reduction of weight in a shorter amount of time, and weight retention for a longer period of time (Baker, 2011). In a study by Ip et. al., (2007) the authors found that women who breastfed for a year had less weight retention one year post partum, compared to their non-breastfeeding counterparts. The maternal weight loss can also be based on the nutritional intake of the breastfeeding mother (Heinig & Dewey, 1997). The weight loss is also based on the increased metabolism during breastfeeding to supplement the infant which can also lead to weight loss (Stuebe, 2009). Mother’s that breastfeed may require an additional 500 calories more which can contribute to increased weight loss while lactating than non pregnant and non-lactating women (Fraser & Grimes, 2003). The caloric intake may vary between mothers which cannot allow for the exact amount of weight loss to be determined (Fraser & Grimes, 2003). In a study by Butte et. al. (1984) explained that women with a mean intake of 2200 calories a day supported adequate lactation while also providing a gradual reduction in weight loss.
Psychological Benefits

The short term benefits of breastfeeding also aide the mother in coping postpartum psychologically. The proposed risk factors postpartum can be the increase of emotional or psychological risks which can lead to increased fatigue, stress and lack of overall maternal confidence (Flores-Quijano, 2008). Heinrichs et. al., (2001) explained that women who breastfed were more likely to respond to stressors in different ways. The levels of cortisol in breastfeeding women were found to be significantly less, in a stress test (Heinrichs et. al., 2001). They also found that the hormones oxytocin and prolactin could have an inhibitory effect when the subjects were breastfeeding thirty minutes prior to a stressor (Heinrichs et. al. 2001). The level of anxiety was found to be less in both breastfeeding and non-breastfeeding mothers (Henrichs et al., 2001). The mood and the calmness in exclusively breastfeeding mothers were greater than their nonbreastfeeding counterparts (Heinrich et. al., 2001).

In a study by Uvnas-Moberg (1998), authors explored the effects of oxytocin on social interactions. The role of oxytocin can be related to antistress factors in both male and female rats, this effect is often seen as the antistress factor associated with lactation (Uvans-Moberg, 1998). The longer period of time that oxytocin is released by the body can have anti-stress effects on the mother. Uvans-Mobergs (1998) in a study on oxytocin injections over a five day period show an even higher antistress factor. Uvnas-Moberg (1998), also described that the oxytocin pulses that occur while breastfeeding can
be shown to correlate to the mother being more open to social interactions and basal oxytocin levels are associated with calmness.

**Breast and Ovarian Cancer**

The initial long term benefits of breastfeeding combined with length of time spent breastfeeding and for a longer duration can reduce the risks of certain cancers (Stuebe, 2009). The reduction of any malignancy as an outcome of breastfeeding is due to hormone released during lactation (Stuebe, 2009). During lactation there is a delay in ovulation or lactation amenorrhea which can lead to changes in the breast tissues (Brown, 2011; Stuebe, 2009). The lactogenesis effect will lead to the differentiation of the breast tissue which can lead to a decrease in malignant formation (Stuebe et. al, 2009; Pang 2007). The risk of breast cancer can be 22% lower in postmenopausal women that breastfed than those who never breastfed (Heinig & Dewey, 1997). A report by Heinig and Dewey (1997) also explained that if all women breastfed at least four to twelve months breast cancer in postmenopausal women could be reduced by 11%. If the duration of breastfeeding an infant was at 24 months or longer breast cancer in postmenopausal women could be reduced by 25% (Heinig & Dewey, 1997).

According to the findings Nurses’ Health Study women who had never breastfed faced a 1.5 fold (95% CI, 1.0-2.2) greater risk of ovarian cancer, compared with women who breastfed for greater than 18 months (Stuebe, 2009). Heinig & Dewey (1997) reports that if a mother breastfed for a period of six months or longer there was a reduced rate of ovarian cancer in Caucasian and African-American women. The longer duration
of lactation can be associated with a protective effect of amenorrhea (Heinig & Dewey, 1997). The reduction of ovarian and breast cancers are not solely related to lactation due to poor supporting research (Heinig & Dewey, 1997).

**Decreased Risks of Metabolic Disorders**

Other long term effects on health in breastfeeding mothers are at a lower risk of diabetes and metabolic disorders compared to those that do not breastfeed (Stuebe et. al., 2009). The Nurses’ Health Studies the risk of type 2 diabetes in the 15 years since their last birth was 1.7-fold higher (95% CI, 1.3-2.3) among parous women who never breastfed, compared with those who breastfed for a lifetime total of two years” (Stuebe, 2005). The effect of the lactation postpartum is associated to constant blood glucose levels, lipid metabolism and a lower blood pressure (Stuebe, 2009). The fasting blood glucose levels in postpartum lactating mothers were lower and glucose metabolism was improved compared to non lactating women (Heinig & Dewey, 1997). In a study by Ip et. al., (2007) it was found that women who breastfed and did not have gestational diabetes mellitus (GDM) had a decreased risk of having type 2 diabetes later in life.

There is also an association of breastfeeding duration and the decrease in hypertension and high cholesterol which can lead to a decreased risk for myocardial infarction (Stuebe et. al.. 2009). This correlation is reported from the Nurses’ Health Study that women who reported having breastfed for a longer duration were less likely to report a diagnosis of hypertension, high cholesterol, or diabetes later in life (Stuebe et. al, 2009). This is related to the high amount of cholesterol that is secreted in breastmilk
about 15-20 mg/100 ml in exclusively breastfeeding women (Heinig & Dewey, 1997). The total cholesterol is reported to be higher during pregnancy and will continue to be somewhat elevated postpartum to supply breastmilk with adequate concentration of high density lipoproteins (Heinig & Dewey, 1997). The lipid levels are seen to continue to be elevated for duration of lactation and when ceased, would return to normal levels (Heinig & Dewey, 1997).

**Reduction of Cardiovascular Disease**

Breastfeeding duration can be linked to decreased risk of cardiovascular disease and risk factors such as hypertension, diabetes, hyperlipidemia and obesity (Schwarz, et. al., 2009). In a study based on the Women’s Health Initiative (WHI), questionnaire sent to women included the length of lactation and total time estimate of lactation. The analysis included 139,681 women. The correlation between obesity and hypertension was more likely in women that had not lactated (Schwarz et. al., 2006). The increased duration of lactation was associated with a reduction of prevalence of cardiovascular disease and risks that can lead to cardiovascular disease (Schwarz et. al., 2006). The study also showed that women who breastfed for a duration greater than twelve months were less likely to have hypertension, diabetes, hyperlipiemia or cardiovascular disease compared to women that did not breastfeed (Schwarz et.al., 2006). In a study on women from the Nurses’ Health Study, it was found that women that breastfed had lower lipoprotein lipase which can affect lipid metabolism (Stuebe, Michels, Willett, Manson, Rexrode & Richard-Edwards, 2009). The evidence has been shown in rats that are
lactating and have lower amounts of visceral adipose tissue and lower amounts of fat stores. The risks of having higher stores of adipose tissue can develop into cardiovascular disease or a myocardial infarction which are related to higher stores of adipose tissue (Stuebe et al., 2009). When a mother breastfeeds, there is a reduction of serum triglycerides and cholesterol which can decrease at a faster rate than those that do not breastfeed (Stuebe et al., 2009). Mother’s who breastfeed have been found to have higher levels of high density lipoprotein cholesterol (HDL) and apolipoproteins which can improve heart health in the long term for the mother (Stuebe et al., 2009). The long term effects found in the Nurses’ Health Study that showed woman who breastfed for a duration of 12 months was ten percent less likely to have developed CVD than women who never breastfed (Schwarz et al., 2010).

**Health Benefits to Child**

**Gastrointestinal Benefits**

A study by Newburg et al. (1998) found that the most common infection in infants the first year of life is rotavirus gastroenteritis. The rotavirus, as it is commonly known is one of the most severe gastrointestinal viruses that infants and young children suffer from. In the United States about half a million deaths occur each year in children under the age of five years old (CDC, 2009). Newburg states that subsequent studies have indicated that although rotavirus infection occurs in breastfed infants, the severity of symptoms are substantially less than that in formula-fed infants. The rotavirus binds most often to the mucin in human milk which it can then replicate in the body infecting
The most frequent binder to the rotavirus found in the body was lactadherin. In human milk lactadherin is an N-linked oligosaccharide that is essential for binding to the rotavirus (Newburg et. al., 1998). The concentration of lactadherin and the immunoglobin-A varied among the women in the study, but the binding factor that lactadherin has allows for a better defense to the rotavirus. Breastfed infants had a better defense to the rotavirus due to the multiple antibodies in the breastmilk (Newburg et. al., 1998). The composition of the breastmilk is much more specific to fit the needs of the infant. In addition, the incidence of many different infectious diseases are decreased in infants that are exclusively breastfed such as necrotizing enterocolitis (NEC), bacteremia, diarrhea, last onset-sepsis, and urinary tract infections. Mainly in premature infants the reduction of NEC is decreased by about 58% in exclusively breast fed infants (Pediatrics 2012). A decreased risk of gastrointestinal infections is associated with any duration of breastfeeding. The effects of the breastmilk can last up to two months after the cessation of breastfeeding (Pediatrics, 2012).

According to the American Academy of Pediatrics (2012), a reduction of celiac disease and inflammatory bowel disease (IBD) can be found in breastfed infants. In infants that are exclusively breastfed there is a 52% reduction of developing celiac disease (Pediatrics, 2012). The reduction is also lower IBD in infants that are breastfed (Pediatrics, 2012). A 31% reduction of IBD into adult life is seen in breastfed infants, and this reduction is related to the protective benefits of breastmilk on the gastrointestinal formation (Pediatrics, 2012).
**Respiratory and Asthma**

Breastmilk has other benefits to the infant that are shown in the overall health from the first year of life and beyond that are physiological. Infants may experience otitis media at least one time in the first year of their life (CDC, 2014). The increase in the chance of them having the infection is almost doubled in formula fed infants, as opposed to those exclusively breastfed (Stuebe, 2009). The oligosaccharides that are in the breastmilk compared to formula have shown a correlation to decreased risk of otitis media and in respiratory infections in the first year of life. The incidence of respiratory infections and asthma are said to be lower in exclusively breastfed infants. The antiviral factors that are present in breastmilk can be protective against certain infections such as respiratory syncytial virus infection (RSV). The Center for Disease Control reported that almost all children will have suffered from RSV by their second birthday (CDC, 2010). A cohort study by Bachrach et. al., (2003) found that infants who were formula fed faced a higher risk of being hospitalized by a lower respiratory infection such as RSV than those exclusively breastfed.

Asthma can also be found to be preventable by exclusively breastfeeding for the first three to six months of life. In a meta-analysis by Gdlevich et. al., (2001) twelve studies were found to support the claim that infants who are exclusively breastfed will have a reduced risk of childhood asthma. The protective effect of the breastmilk was much higher in those with a history of asthma or atopy. In infants that were breastfed for four months, the risk of pneumonia increased fourfold, compared to infants breastfed for
six months (Pediatrics 2012). The severity of asthma and the amount of oxygen needed is also higher in infants that were never breastfed (Pediatrics, 2012).

**Reduction of Infant Mortality and SIDS**

The Centers for Disease Control reported that sudden infant death is the leading cause of death among infants from one to twelve months (SUID & SID, 2013). SIDS is the third leading cause overall of infant mortality in the United States (SUID & SID, 2013). The prevalence of SIDS is very high in the United States, and in Ohio the rates have decreased to 0.7 per 1,000 infant deaths/106 deaths in 2004 (Ohio Vital Statistics, 2008). Breastfeeding can play an extremely high role in reducing the rates of SIDS. This is because the mother will keep the infant at a closer range and will often feed frequently throughout the night (Bernshaw, 1991). McVea, Turner and Peppler (2000), conducted a meta-analysis that found that there was a 50% reduction of SIDs in infants that were breastfed. The role of breastmilk is not limited to preventing SIDs completely because the cause of SIDs can be related to respiratory infections, gastrointestinal infections or bacterial infections. The association can be made between breastmilk and the reduction of SIDS due to the protective effects against certain infections (McVea, Turner & Peppler, 2000).

Infant mortality rates in the first year of life are also reduced when breastfeeding lasts for a longer time period the infants first year of life. A study by Chen and Rogan (2004), found that in the United States, if an infant is breastfed for a longer amount of time, there would be a lower risk of postneonatal death. Chen and Rogan (2004) also
found that among certain cases that infants who were breastfed for any amount of time were found to live much longer than those who were never breastfed. The amount of time that an infant is breastfed is extremely pertinent to the length of life and decrease in mortality rates. The protective effect of breastmilk can be seen in cases of infant’s breastfed for at least three months (Chen & Rogan, 2004). The idea suggests the longer the duration of breastfeeding will lead to a greater protective effect for the infant. Infant mortality cannot be accurately measured consistently due to the differences in controls because they often have a longer duration to breastfeed the infant. The breastfeeding effects may also not be completely accurate due to underreporting by mothers whose infants did not survive (Chen & Rogan, 2004).

**Cognitive and Motor Skills Development**

The cognitive and neurodevelopment of infants can be seen within the first year of life into adulthood. The motor development of an infant that is exclusively breastfed, can be reached earlier include the development of when the child first rolls over, sits, crawls, and walks (Dewey, Cohen, Brown & Rivera, 2000). When comparing when breastfed and formula fed infants in mobility, or rolling over, there was a significant difference in the two groups. The breastfed infants rolled over much earlier in life than infant’s formula fed. The breastfed infants were also significantly earlier in raising their heads than formula fed infants. The two studies did describe that formula fed infants were significantly slower at reaching the crawling milestone (Dewey, Cohen, Brown & Rivera, 2000). In the first study the infants that were exclusively breastfed were more
likely to have walked at an earlier age than those who are formula fed, which was moderately significant (Dewey, Cohen, Brown & Rivera, 2000).

A meta-analysis by Anderson, Johnstone & Remley (1999), the researchers compared 20 studies showing that found increased cognitive development scores in breastfed infants by 3.2 points than that were formula fed. They also found that the development of cognition was seen early in infancy to the adolescent stage of life. It was also found in the meta-analysis that the effects of breastmilk on cognition in low birth weight infants, was that the effects are even greater than on regular weight infants. The effect of breastmilk on low birth weight infants was 5.18 in cognition development scores compared to 2.66 points in regular weight infants that were breastfeeding also. It was found that the visual function in exclusively breastfed infants is earlier developed than infants that are formula fed.

**Type 1 Diabetes Mellitus**

When finding a relationship between breastfeeding and decreasing the risk of Type 1 diabetes mellitus many studies have found similar results. In a study by Kostraba et. al., (1993) investigated the relationship between the possibility of increasing the risk of type 1 diabetes and the early exposure to cow’s milk and solid foods to infants. Kostraba et. al., (1993) reported on the type 1 diabetes population in Colorado at random. The study did find that if the infant was exposed to cow’s milk before three months of age the risk of type 1 diabetes was increased because the gut of the infant may not have tight junction closure or because cow’s milk is given during a gastrointestinal infection.
which can alter the intestinal barrier (Kostraba et al., 1993). It is very possible that the introduction of the cow’s milk can be related to type 1 diabetes, but to find a complete cause and effect with no other contributing factors can be difficult.

**Obesity Reduction**

The reduction or prevention of obesity can be related to infant’s breastfeeding at some point of early feeding (Pediatrics, 2012). Obesity can be linked to breastfeeding early in feeding compared to formula fed infants by how the infant regulates the amount of formula consumed (Pediatrics, 2012). The regulation of milk is determined by how the infant suckles to increase or decrease the supply of milk from breast (Pediatrics, 2012). When the infant is fed by bottle the bottle emptying time is much faster causing the infant to have poor regulation and poor feeding habits in the future (Pediatrics, 2012). In turn this can lead to increased weight gain in infancy and lead to poor eating habits into adolescence and adulthood.

**Leukemia and Cancers**

There can be some correlation between breastfeeding and risk of childhood leukemia’s acute lymphoblastic leukemia and acute myeloblastic leukemia. Leukemia is the leading cause of mortality in the United States in children under the age of fifteen. In recent studies a protective benefit of breast milk is reducing the chances of children developing leukemia (Kwan, Buffler, Abrams & Kiley, 2004). In a meta-analysis Kwan, Buffler, Abrams & Kiley (2004), found from fourteen studies that the duration of breastfeeding lessened the risks of childhood leukemia. Breast milk has many protective
properties for the infant, and it is not completely clear what protects the infant from developing any type of leukemia.

**Food Safety and Breastmilk**

**Foodborne Illness**

Food safety is very important when feeding an infant in the first year of life. The protective effects of breastmilk are never ending, but negative food safety effects can compromise the infant’s health. The storage of human milk is very important, but if an infant is exclusively breastfed the milk is coming directly from the mother at the perfect temperature. In many developed countries there are storage guidelines to be followed to keep the breast milk in best form for the infant. When breast milk is fed directly to the infant there can be likeliness of causing harm to the infant. But when the infant is directly fed there is little chance of infection due to skin of the mother and the duct micro-flora. When breast milk is stored it should be stored by refrigeration or freezing to keep for a longer period of time. Ogundele (2000), describes that breast milk can be kept at room temperature for up to eight hours, at a positive four degrees Celsius for 24 hours and frozen for up to one month. These guidelines are based on studies that will keep the breastmilk from bacterial multiplication occurring and possibly infecting the infant (Ogundele, 2000). The amount of bacteria in breastmilk can vary depending on how it is handled once expressed and stored. The increase in bacteria of breastmilk from 48-72 hours is bacterially acceptable according to Ogundele (2000). This is compared to
cow’s milk formula which has significant increase in bacteria within 6 hours at refrigeration and room temperature.

**Formula Contamination**

Many studies and reports find that it is very common for infant formula to be contaminated, which can cause food-borne illness or mortality in infants. A report from the Food and Drug Administration and Centers of Disease Control (CDC) released a statement on four cases of Cronobacter Bacteria (FDA, 2012). The cases were based on the powdered infant formula that was contaminated and nursery water that was also contaminated with the Cronobacter Bacteria. These cases of infection must be reported to the CDC, in order to regulate the formula and investigate their origin. The bacterium that was found in the formula was deadly to two infants. These cases are common when formula is given to young infants.

Enterobacter sakazakii (E. sakazakii) is another common pathogen that is found in infant formula. E. sakazakii is an opportunistic pathogen that can be life threatening to infants. The bacteria E. sakazakii is often found in food and in the environment (Drudy et. al., 2006). The infections that are most commonly caused by E. sakazakii can be life threatening meningitis, septicemia, bactereamia, necrotizing enterocolitis (NEC) and necrotizing meningoencephalitis after ingestion (Drudy et. al., 2006; Forsythe, 2005). These infections are most threatening to low birth weight infants and premature infants that are fed powdered infant formula (Drudy et. al., 2006). An infected infant can have
encephalitis which can lead to more complications and possibly infant mortality (Drudy et. al., 2006).

There are many regulations in place to prevent any bacteria from contaminating powdered infant formula (PIF). Forsythe (2005) states, “PIF preparations are not manufactured as sterile products.” The bacteria form is very often found in the PIF, and can be in the formula or can be contaminated from an outside source (Drudy et.al., 2006; Forsythe, 2005). The contamination that occurs intrinsically often is during the manufacturing process which is often controlled very well due to manufacturing regulations (Drudy et. al., 2006; Forsythe, 2005). There are also external factors that can cause contamination of the infant formula. External contamination is often caused by poor hygiene by the preparer of the formula which shows need of proper education on formula preparation. Other external factors that can cause contamination are poor cleaning of bottles, utensils, and use of blenders (Drudy et. al., 2006; Forsythe, 2005).

**Breastfeeding Support**

There are different sources that a mother encounters during pregnancy and postpartum are beneficial to the success of breastfeeding. Although there are multiple sources providing support some can be more influential than others. The value of support that is given to a mother can potentially increase the outcomes of success overall.

**Spouse**

The spouse or father of the child plays a vital role in supporting the mother during breastfeeding. When the father is more supportive and has a favorable opinion on
breastfeeding the mother is more likely to choose to breastfeed (Giugliani, Caiaffa, Vogelhut, Witter and Perman, 1994). Arora, McJunkin, Wehrer and Kuhn (2000), found that 71% of women in a group of 133 were influenced by the father’s opinion on breastfeeding to a much higher degree than other outside opinions. The likelihood that mothers will breastfeed can majorly be influenced by the fathers support during pregnancy and postpartum. The father’s positive support was found to be influential not only to the initiation of breastfeeding, but also to the duration of breastfeeding (Giugliani et. al, 1994).

In a study by Ingram, Johnson and Greenwood (2001) it was found that, in low-income women the support of the spouse was more influential on the decision to breastfeed. The father or spouse was especially important during the coping period after birth. In the study the emotional support the mother received from the father during the first six weeks after birth often resulted in the mother breastfeeding for a longer duration (Ingram, Johnson & Greenwood, 2001). The emotional support that a mother receives from the father of the child is crucial in breastfeeding. A study in Mexico found that the approval of the father of the child on breastfeeding showed a positive correlation in the duration of breastfeeding (Raj and Plichta, 1998). The support from the father or spouse is shown in many studies to increase the duration of breastfeeding for up to four months compared to women not receiving support from a partner (Raj and Plichta, 1998). The decision to breastfeed can be negatively influenced by the spouse when there is disapproval from the spouse on breastfeeding. This is especially evident in the duration
of breastfeeding if the spouse does not approve of long duration (Raffle, Ware, Borchardt & Strickland, 2011).

**Social**

The social support for breastfeeding can come from a mother’s social environment of peers, as well as other social influences. Women are majorly influenced by social and cultural norms on their initial decision to breastfeed (Li, Rock, & Grummer-Strawn, 2007). There are many outside influences and social messages that do not promote breastfeeding and can influence a mother’s decision to breastfeed. The ethnic and cultural background can also have a significant influence on a mother’s decision to breastfeed (Lawrence & Lawrence, 2011). There can be negative social interaction while breastfeeding that may cause a mother to feel uncomfortable when breastfeeding in some social situations. This can cause a mother to discontinue breastfeeding at an early time. The social interactions that a mother may face in a specific culture may help or hinder the decision to breastfeed. The members of a woman’s social support group such as family members and friends can be very important in the breastfeeding decision (Raj & Plichta, 1998). In a study of Appalachian women, the greatest influence on the decision to breastfeed was the individual with the highest power in the family. The women in the study expressed that if family members had a negative or positive experience with breastfeeding, it would influence the mother’s decision to breastfeed (Raffle, Ware, Borchardt & Strickland, 2011).
Breastfeeding can be successful when there is a positive social environment. In a study of African-American women who had a supportive maternal-grandparent or paternal grandparent, their opinion was influential in the decision to breastfeed (Wright, 2011). This social interaction can influence the decision early on in pregnancy if the grandparent had a negative or positive experience with breastfeeding. A study by Raj and Plichta (1998), Mexican-American women stated that the maternal grandmother was the most influential on breastfeeding support. The study also showed that among Japanese adolescents if the mother was positive on breastfeeding the adolescent was more likely to have a positive outlook on breastfeeding. The social support that is given to a mother when deciding to breastfeed can vary depending on culture or beliefs of the mother.

In a study by Li, Rock and Grummer-Strawn (2006) public attitudes on breastfeeding were found to influence a mother’s decision to breastfeed. In general the public opinion of breastfeeding in the United States is that mothers should breastfeed in private places only (Li, Rock & Grummer-Strawn, 2006). This opinion of breastfeeding can lead to a mother feeling ashamed and unwelcome to breastfeed in public places or around peers. A research study conducted through WIC found that many women were attracted to breastfeeding but feared criticism from their family, spouses, friends and work environment (Lindberger & Bryant, 2000). Most often women felt that breastfeeding would conflict with much of their social life and keep them from things they enjoyed. The mothers’ education on breastfeeding along with support from family
and social influences can have a positive impact on a mothers’ choice to breastfeed (Arora, McJunkin, Wehrer & Kuhn, 2000).

**Medical Staff**

An important factor for a mothers’ decision to breastfeed can be based on the support from medical staff such as an obstetrician, pediatrician and nurses. A study by Arora, McJunkin, Wehrer and Kunh (2000) it was found that medical professionals can be very influential in a mothers’ decision to breastfeed but, they have a very small window in this influence. It is very important for health care professionals that provide prenatal care to provide information and guidance early in the pregnancy to help with breastfeeding. The medical staff that provides information to the mother while pregnant can have a great role in promoting good breastfeeding behaviors prior to pregnancy (Aksu, Kucuk, & Duzgun, 2011). When the support is given to the mother it is very important that the clinician is giving support at the crucial periods during pregnancy. But, in many circumstances the obstetrician may not be properly educated on breastfeeding and may not give support at the right time (Aksu, Kucuk & Duzgan, 2011).

Due to shorter hospital stays medical staff must provide the necessary information in a short period of time to mothers on breastfeeding (Arora, McJunkin, Wehrer, Kuhn, 2000). The crucial period for a mother to have breastfeeding support is during their hospital stay. Riva et. al., (1999) found that there was a positive influence on mothers that received support from a nurse during their stay. Mothers that received guidance in the maternity ward from nursing 89% had a better experience compared to women that
did not have nursing guidance at 81% having a poor experience. The breastfeeding guidance that a mother is given during the hospital stay can be more influential in a baby friendly hospital. The baby friendly hospital initiative was designed to increase breastfeeding rates in hospitals that have high concentrations of African American women and premature births. Boston Medical Center served a large population of impoverished and high racial minorities and did not have interventions in place to support breastfeeding. The baby friendly initiative Boston Medical Center within a two year period had increased breastfeeding initiation rates in full term infants. The baby friendly initiative gives the hospital the appropriate steps to increase initiation and duration rates among new mothers in any hospital (Merewood et. al., 2003).

**Lactation Consultants**

Other medical staff are often more influential on a mother’s decision to breastfeed and they may have more opportunities to give support to the mother. But lactation consultants can be vastly educated on breastfeeding and can provide greater support to mothers. There are different types of lactation consultants that can provide education to a mother after giving birth. In different facilities there may be certified lactation consultants that have underwent training and courses to provide lactation support. A certified lactation consultant is educated in breastfeeding and human lactation support such as latching and feeding, as well as counseling mothers, and having knowledge of milk production (Healthy Children, 2014). Some certified lactation consultants may further education to become an International Board Certified Lactation Consultant
An IBCLC is a health care professional who specializes in the clinical management of breastfeeding (IBCLC, 2014). The skills that an IBCLC has are often more extensive knowledge of breastfeeding, assessments, and intervention based health care. The IBCLC may often provide greater strategies on family, group and overall health promotion to mothers that are breastfeeding (IBCLC, 2014). The support provided from both types of lactation consultants may be based on the level of care that is provided to the mother during pregnancy or postpartum.

The support that is given to the mother by the lactation consultant can be very influential due to the longer duration of support and close contact with the mother more often (Taveras, Capra, Braveman, Jensvold, Escobar & Lieu, 2003). This time is often the most beneficial for support to help the mother with positioning, support and breastfeeding education (Raj & Plichta, 1998). Multiple studies support how a lactation consultant can increase breastfeeding duration and initiation. Raj and Plichta (1998), found that group and individual counseling with a lactation consultant increased breastfeeding rates from 32% to 52% in a group of women who attended a migrant health center in North Carolina. Women who met with a lactation consultant were more likely to try to breastfeed (61.5%) according to a study by Haas, Howard, Christopher, Rowan, Broga and Corey (2006).

The overall success of breastfeeding can be influenced by mothers attending support groups. Raj and Plichta (1998) described that women that attended support groups were more likely to exclusively breastfeed than those that did not attend a support
group. In multiple studies peer and social groups found that breastfeeding support groups and education improved breastfeeding initiation (Lawrence & Lawrence, 2011). The La Leche League was established in 1957, which provides mothers with pregnancy classes, support groups and one on one support for mothers postpartum. The league also provides a personal telephone counselor to provide support postpartum and decrease the amount of time that a mother may have to spend with a physician outside of the home. The support that is provided to the mother also has shown to increase breastfeeding initiation in adolescent mothers. Adolescents were provided education and support during pregnancy and postpartum. Of the adolescent mothers 65% of the mothers initiated breastfeeding compared to those with no education intervention (Lawrence & Lawrence, 2011).

**Employer**

The support a woman has in the workplace can be very influential on the decision to continue breastfeeding when returning to work (Tahmicioglu, 2012). Women that work outside of the home often have shorter duration of breastfeeding (Murtagh & Moulton, 2011). It is common for a mother to discontinue breastfeeding within the first month of returning to work than those that do not return to work full time. There are initiatives that had been started by some states to increase breastfeeding rates to meet the goals of Healthy People 2010. Although these initiatives did not meet the goals of the Healthy People 2010 breastfeeding rates in the individual states there have been further initiatives to increase breastfeeding rates (Murtagh & Moulton, 2011). The retention
rates of mothers after returning to work may decline for some companies. According to a
2007 survey from Medela and Working Mother reported that 98% felt that it was
important if the workplace offered lactation classes (Casserly, 2009). The companies
that offered lactation classes reported a 59% greater retention rate after childbirth
compared to their counterparts who did not offer classes (Casserly, 2009).

With the recent introduction of the Affordable Care Act (ACA) of 2010, there is
now initiative for employers to be breastfeeding friendly. The ACA requires employers
of fifty or more employees to give mothers time to pump or express milk and are required
to provide mothers a non-bathroom space to express milk (Federal Support, 2013). The
ACA has also helped with insurance to cover education to mothers during pregnancy and
postpartum to help accommodate breastfeeding when returning to work (Federal Support,
2013). The ACA also promotes health benefits to provide breastfeeding supplies at a
lower rate or discounted rate (Federal Support, 2013).

There are benefits to the employer by providing support in the workplace to a
breastfeeding mother. Women are the largest growing population in the workforce with
70% of full time female employees having children the ages of three and under (Support
CDC, 2013). Although women that have intentions of working full time they may have
shorter duration rates of breastfeeding than their counterparts that do not return to full
time work (Support CDC, 2013).
CHAPTER III

METHODOLOGY

The relevance of researching breastfeeding support during the postpartum period can show how support can influence breastfeeding. The support that a mother is given can be influential from multiple sources during pregnancy and postpartum. The purpose of this study was to gain a better understanding of how different sources of support can influence a mother that is breastfeeding.

The study found descriptive data that was post-test only. The study was administered to mothers that are currently breastfeeding or have recently discontinued breastfeeding. The mothers were given a survey on how support affected them.

Setting

The surveys were administered to mothers that are currently breastfeeding or recently have discontinued breastfeeding. The mothers were given the survey in different settings Akron Children’s hospital Neonatal Intensive Care Unit, Akron General Neonatal Care Unit, Mercy Medical Center of Canton breastfeeding support group, Aultman Hospital Mother’s Connection Support Group and The Breastfeeding Center weekly support group. The surveys were administered to women that are currently breastfeeding and some woman that had recently discontinued breastfeeding.
The settings did prove to have some effect on the amount of surveys that were returned. The NICU’s had minimal response rates due to mothers not being present at all times with the patient/infant. The two NICU’s: Akron Children’s Hospital NICU returned seven questionnaires and Akron General NICU returned six questionnaires. The breastfeeding support groups had similar response rates. The Aultman Hospital Mother’s Connection had eight completed questionnaires, Mercy Medical Center had seven completed questionnaires and the Breastfeeding Center had ten completed questionnaires.

Participants

The participants were mothers that were currently breastfeeding and mothers that had recently discontinued breastfeeding. The age range for the mothers was 22-39. The mothers were found though a convenience and purposive sample to find the best response rates. The locations were chosen for convenience in north eastern Ohio.

Interventions and Materials

The expectant mothers and breastfeeding mothers were provided a survey to find the independent variables of different types of breastfeeding support on breastfeeding. The surveys were administered by the lactation consultant on staff at the support group or in the hospital. Appendix A was the questionnaire that was administered to the breastfeeding mothers and those that had recently discontinued breastfeeding. Each location was given twenty questionnaires to be completed by mothers.
Survey

The survey was based on a survey by Haas et. al. (2006) was originally administered to mothers at obstetrician gynecology appointments and at two year child checkups. The study did not describe method of creating the survey. The questionnaire that was created was formed based on input of committee members based on face and content validity to gain a better understanding of forms of support during breastfeeding.

Age

The questionnaire asked the age of the mother to exclude mothers under the age of eighteen. The age of the mothers was needed to show if there were any trends with age and breastfeeding.

Number of Pregnancies and Previously Breastfed Infants

The mothers were asked if they had previous pregnancies to find if the mother had any previous breastfeeding experience. It was relevant to find if the mother had any previous breastfeeding experience to understand if there was any type of previous support. The mother had to be asked if there was any previous experience with breastfeeding because it could be related to current success of breastfeeding.

Education

The education level of the mother can show if there is more education if that can affect breastfeeding success. The education of a mother was asked to find if mothers
with a higher level of education were more likely to breastfeed than those with minimal education.

**Income**

The household income was asked to find if there was any connection with breastfeeding. The household income can help with more time and resources to give the mother more support when breastfeeding.

**Race**

The race of the mother can show if there is any difference in breastfeeding duration or types of support that is portrayed as important. The race of the mother can have no effect on the success of breastfeeding it can mainly be based on the beliefs of the mother.

**Support**

The sources of support were asked to be described by the mother. A likert scale was used throughout the questionnaire to explore if different support was or was not influential on the mother. The different sources of support were: spouse, mother, mother-in-law, physician, lactation consultant, nurse and pediatrician. The support system during breastfeeding explained who the mother believed to be very important to support or not important in providing support. The mother was asked the reasons for successful breastfeeding. The mother then ranked different sources of support from very important to not important. The mother was asked if recently discontinued breastfeeding
would any support facilitate breastfeeding. The mother was asked to rank the sources of support such as: spouse, family, work, physician, friends, WIC or lactation. The mother was asked to rank each as very important to not important as a source of support. Understanding why a mother had discontinued breastfeeding was important to see if support was a reason for discontinuation.

Reasons for Success

The mother was asked to rank their reasons for success in breastfeeding. The mother was asked to rank reasons for success: your desire to breastfeed, best for baby, economical, spouse support, physician support, family support, WIC support, lactation support or pediatrician support. Each of the reasons was to be ranked as very important to not important for reasons for success. There was importance to finding where mothers received information on breastfeeding and if those sources could be more influential in the distribution of information to aid in increased support.

Method of Delivery and Skin-to-Skin Contact

The mother was asked the method of delivery. The mother was also asked if the mother had skin-to-skin contact with the infant after delivering. The mother was also asked if she was separated from the infant after birth. Breastfeeding and skin to skin contact within the first hour after giving birth can show if the mother is supported right after birth by hospital staff.
Statistical Analysis

A statistical analysis was done after the questionnaires were submitted. A descriptive post-test only data was calculated from the surveys. The data that was collected from the questionnaires was entered into the Statistical Package for Social Sciences (SPSS) version 21 statistical program at Kent State University. The descriptive statistics from the questionnaire generated the mean and standard deviation. Frequencies were also found from the descriptive data. A Chi-Square test of association was done to find significance ($p \leq 0.05$) between the method of delivery and separation from child after birth.

Procedure

The project was approved by the Kent State University’s Institutional Review Board (IRB). The surveys also were approved by Mercy Medical Center IRB and the board reviewed the questionnaire at their monthly meeting in August. The survey was also approved by the IRB at Akron Children’s Hospital to administer surveys in the neonatal intensive care units (NICU). The surveys were given to the lactation consultants at each institution in August of 2014 and were returned to the co-investigator in October of 2014. The questionnaires were given to the lactation consultants and each were provided a set of instructions and who to contact when the questionnaires were completed. The samples were recruited based on a convenience sample based on the mothers attending the support groups or currently breastfeeding in the NICU. The mothers that are currently breastfeeding can help find other mothers that are currently...
breastfeeding to also participate in the study. The questionnaires were given to the mothers that are present at the support groups weekly, mothers that were currently breastfeeding in the NICU and mothers that were currently breastfeeding and found by other mothers. The questionnaire took ten to fifteen minutes. The lactation consultants were available to answer questions if confused about the survey. The questionnaire was given only one time to each mother to ensure that there was not a need to discard responses. The mothers returned the questionnaire to a staff member to be set aside for a collection day.
CHAPTER IV

JOURNAL ARTICLE

Introduction

In the United States the 2010 breastfeeding rates 16.4% of mothers were exclusively breastfeeding at six months, and 27% of infants were breastfed to twelve months (Breastfeeding Report Card, 2014). The goals of Healthy People 2020 believe that it is important that 25% of infants should be exclusively breastfed at six months and 34% of infants should be breastfed at twelve months (Healthy People, 2014). Breastfeeding mothers are not meeting the goals of the American Academy of Pediatrics to exclusively breastfeed for the first six months and to breastfeed with complimentary foods for the first twelve months (Pediatrics Breastfeeding, 2014).

The importance of breastfeeding is positive for both mother and infant to decrease short and long term health problems. The duration of breastfeeding is said to reduce gastrointestinal infections, necrotizing enterocolitis, respiratory infections, and infant mortality/SIDS in the first year of life (Newburg et. al, 1998; Pediatrics, 2012; Stuebe, 2009). There has been a large increase in childhood obesity, incidence of Type 2 Diabetes mellitus, infant mortality and gastrointestinal disorders and diseases (Newburg et. al, 1998; Pediatrics, 2012; Stuebe, 2009). Breastfeeding has been shown to have a positive correlation to reducing these diseases in an infant’s life.
The effects of breastfeeding in infants can be preventative for their health outcomes for the entirety of their lifespan. The increased amount of infant mortality has shown to decrease in infants that breastfeed. SIDS is one of the leading causes of death of infants in Ohio (Ohio Vital Statistics, 2008). The long term effects are decreased also such as the incidence of Type I or type II diabetes mellitus, childhood cancers, obesity and metabolic disorders (Eidelman & Schanier, 2012). Childhood obesity alone has increased in children from seven percent in 1980 to eighteen percent in 2010 (Childhood Obesity Facts, 2013).

The positive benefits for mothers are immense and are seen in postpartum to post menopausal stages of the mother’s life. The short term effects of breastfeeding are extremely significant to reduce postpartum depression and postpartum weight retention (Stuebe, 2009; Mahan, Escott-Stup & Raymond, 2007; Eidelman & Schanier, 2012). A longer duration of breastfeeding can potentially prevent post menopausal diseases such as cardiovascular diseases; type two diabetes, hypertension, breast and ovarian cancers (Schwarz et. al., 2009; Heining & Dewey, 1997; Stuebe et. al., 2009).

Breastfeeding support is the key in breastfeeding success in many different ways. Support from a spouse, family, clinician support, social support and employer support can be crucial in determining the duration of breastfeeding. When the support system around the mother is encouraging it is especially important at six weeks postpartum (Ingram, Johnson & Greenwood, 2002). The support given to the mother is extremely important in the decision to breastfeed and the duration of breastfeeding (Raj & Plichta,
The support from a clinician is very important to mothers that are breastfeeding. Taveras, Capra, Braveman, Jensvold, Escobar and Lieu (2003), found that women who received clinician support were less likely to discontinue breastfeeding at twelve weeks.

The support that a breastfeeding mother receives from their social surroundings can also encompass the mother to continue to breastfeed for a longer duration. The maternal grandmother giving support or the mother being exposed to a social influence of breastfeeding can aide in the overall decision to breastfeed (Raj & Plichta, 1998). Breastfeeding support is very important to encourage breastfeeding and ensure longer duration.

The importance a partner or the father of the child in the support is critical in the initiation and duration of breastfeeding (Ingram, Johnson & Greenwood, 2002). By educating the partner or spouse on the importance of breastfeeding may help increase breastfeeding rates greatly. The physician and care team during labor is imperative to the mother postpartum (Merewood, Philipp, Chawla & Cimo, 2003). There are a large amount of baby friendly hospitals that can help in the promotion and support of breastfeeding. The institution must be committed to focus on breastfeeding and the importance for the infant (Merewood, Philipp, Chawla & Cimo, 2003). This role includes the physicians, nurses, lactation consultants and dietitians. The primary care group can have an essential role in the initiation of breastfeeding (Merewood, Philipp, Chawla & Cimo, 2003). The increase support leads how breastfeeding rates are tracked and how to understand if different methods of support are leading to increased rates.
Methodology

Design

The study design to find descriptive data that is post-test only. The breastfeeding mothers were asked sources of support including the: spouse, family, mother, mother-in-law, physician, lactation consultants, nurses and pediatrician. The mothers were asked if they felt these sources of support were very important, important, somewhat important or not important as a source of support. They were asked to rate their reasons for motivation to breastfeed: their desire to breastfeed, best for baby, economical, spouse support, physician support, family support, WIC support, lactation support or pediatrician support. Mothers were asked what attributed to their breastfeeding success. They were asked to identify if they were very important, important, somewhat important or not important. The mothers were also asked to identify their feelings on what source of support was most important for breastfeeding success. They were asked the: spouse, family, work support, physician support, lactation support or social support. The mothers were asked to rank them as very important, important, and somewhat important to not important.

Sample

The participants were found through a convenience sample of northeast Ohio hospital’s support groups, Neonatal intensive care unit and a local stark county breastfeeding center. The mothers that were currently breastfeeding or had recently discontinued were found through these local places or by word of mouth from a current
breastfeeding mother. The criteria the mothers had to meet included being above the age of eighteen and breastfed their infant. Any mothers under the age of eighteen that filled out questionnaires would be discarded. The sample was women from ages 22-39 were used for the surveys. The mothers that were included in the survey met all criteria.

**Measures**

A questionnaire was developed from a previous breastfeeding questionnaire from a Military Hospital on Breastfeeding Support (Haas et. al., 2006). The questionnaire that was developed was based on face validity and content validity. The questionnaire was created so mothers could understand what was being asked in each question about their opinions on breastfeeding. The committee came upon agreement to use a likert scale to give mothers a chance to rank their different supporters throughout their breastfeeding experience.

**Procedure**

The project was approved by the Kent State Institutional Review Board (IRB), Akron Children’s IRB and Mercy Medical Center’s IRB. The surveys were then given to each sites lactation consultant that had agreed to participate in the project. The survey had an attached consent form that gave permission to participate in the project. The surveys were passed to mothers from late August to early October, 2014. The lactation consultants were reminded one week before the scheduled pick up that the questionnaires were due. The responses were collected from each site and after two weeks were assessed and summarized.
Data Analysis

The demographic information, breastfeeding status, breastfeeding support, method of delivery and motivation to breastfeed were entered into the SPSS 21 statistical software package. Descriptive data post-test only design was used for the analysis of findings from the surveys. A Chi-Square test of association was used to find reasons for success from different types of support. The method of delivery was compared to separation from the child after birth in a Chi-Square test of association. The method of delivery was also compared to skin to skin contact with the child after birth using a Chi-Square test of association.

Results

A convenience sample of 38 mothers participated in the survey all meeting the required survey criteria. All of the 38 participants were included for the analysis of the surveys.

Subject Characteristics

Table 1: Demographic Data of Breastfeeding Mothers in Support Groups and NICU’s

<table>
<thead>
<tr>
<th>Demographic</th>
<th>F</th>
<th>M ± SD</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>37</td>
<td>29.73 ± 4.489</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>3</td>
<td>7.9</td>
<td></td>
</tr>
</tbody>
</table>
Some College 15 39.5
Complete College 12 31.6
Higher Degree 8 21.1

Income
20-40,000 a year 13 34.2
40-60,000 a year 9 23.7
60-80,000 a year 9 23.7
80,000 and above 5 13.2

Total number of subject N= 38

Significance of Support on Mothers after Birth

 Mothers that participated in support groups were asked to rank different people that aided in their breastfeeding support. The descriptive statistics that were asked: spouse support, family support, mother support, mother in-law support, physician support, lactation consultant support, nurse support and pediatrician support. The mothers were asked to rank the sources of support as very important (4), important (3), somewhat important (2) or not important (1). After analysis was done the groups that scored from a 3-4 suggested a higher level of support. Out of the total subject group (N=38), 37 mothers ranked the spouse as a major supporter in breastfeeding with a mean score of 3.97 out of 4. The mothers also reported (n=38), 35 mothers reported that an important supporter was a lactation consultant with a mean score of 3.57 out of 4. Table
Table 2: Sources of Support after Giving Birth in Breastfeeding Mothers

<table>
<thead>
<tr>
<th>Source of Support</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse</td>
<td>37</td>
<td>3.97</td>
<td>0.164</td>
</tr>
<tr>
<td>Family</td>
<td>32</td>
<td>3.19</td>
<td>1.061</td>
</tr>
<tr>
<td>Mother</td>
<td>34</td>
<td>3.03</td>
<td>0.937</td>
</tr>
<tr>
<td>Mother In-Law</td>
<td>32</td>
<td>3.00</td>
<td>1.078</td>
</tr>
<tr>
<td>Physician</td>
<td>30</td>
<td>3.07</td>
<td>0.815</td>
</tr>
<tr>
<td>Nurses</td>
<td>34</td>
<td>3.26</td>
<td>0.898</td>
</tr>
<tr>
<td>Lactation Consultant</td>
<td>35</td>
<td>3.57</td>
<td>0.815</td>
</tr>
<tr>
<td>Pediatrician</td>
<td>31</td>
<td>2.81</td>
<td>1.195</td>
</tr>
</tbody>
</table>

Mothers Reasons for Breastfeeding Success

Mothers were asked for their reasons to have breastfeeding success and to rank as very important to not important. The questions were based off of different reasons that mothers choose to breastfeed their baby. These questions included: your desire to breastfeed, best for baby, economical, spouse support, physician support, family support, WIC support, lactation support and pediatrician support. The mothers were asked to rank the sources of support as very important (4), important (3), somewhat important (2) or not important (1). Of the 38 mothers, 35 ranked their desire to breastfeed as important.
with a mean of 3.89 out of 4. The statistics also showed of the 38 mothers, 35 also ranked breastfeeding being best for baby as important. Of the other groups there was not a level of importance that was significant to report.

**Mothers Opinion on type of Support and Breastfeeding Success**

The subjects were asked to rank what they felt was the most influential to breastfeeding support in mothers. Although breastfeeding success was not defined for participants the questionnaires were completed. Of the 38 participants, 37 believed that spouse support was important for breastfeeding success. The importance of lactation support to 37 of the 38 mothers was also ranked as important.

**Significance in Method of Delivery**

The method of delivery was asked to be either vaginal or by a cesarean section (C-Section) and was compared to the child being separated from the mother after birth. A Chi-square test of association was used to find significance (p<0.05) when compared. The significance between method of delivery and the separation from mother at birth was most apparent between mothers that had a C-section. Of the total subjects twelve of the mothers that had a C-section were also separated from their child after birth. Of the 20 mothers that had a vaginal birth two were separated from their baby showing no significance. Table 3 shows the level of significance for each type of delivery and if the mother was separated from the baby after birth.
Table 3: *Method of Delivery and Separation after Birth*

<table>
<thead>
<tr>
<th>Method of Delivery</th>
<th>N</th>
<th>Separated from baby</th>
<th>Not Separated from baby</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-Section</td>
<td>18</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Vaginal</td>
<td>20</td>
<td>2</td>
<td>18</td>
</tr>
</tbody>
</table>

(p<0.05)

The significance was also shown in method of delivery compared to skin-to-skin contact within the first hour after delivery. In mothers that had a C-section there was significance (p<0.05) of not having skin-to-skin contact within the first hour of birth. Of the 18 mothers that had a C-section eight mothers did not have skin-to-skin contact showing significance. The mothers that had a vaginal delivery (n=20) all did have skin-to-skin contact within the first hour which showed no level of significance.

Table 4: *Method of Delivery and Skin-to-Skin Contact*

<table>
<thead>
<tr>
<th>Method of Delivery</th>
<th>N</th>
<th>Skin-to-skin</th>
<th>No Skin-to-skin</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-Section</td>
<td>18</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Vaginal</td>
<td>20</td>
<td>20</td>
<td>0</td>
</tr>
</tbody>
</table>

(p<0.05)

**Discussion**

The purpose of this study was to find descriptive statistics in breastfeeding support and breastfeeding. The results showed that breastfeeding support is related to breastfeeding.
Breastfeeding Mothers

The subjects of the study were 38 breastfeeding mothers that had attended a support group or been in the NICU while they were breastfeeding. The ages of the mothers ranged from 22 to 39. The mothers of lower income in a study by Ingram, Johnson and Greenwood (2001) found that breastfeeding support was more likely to increase breastfeeding duration. Of the 38 mothers that participated in the study some had completed some college. Mothers that attended class’s breastfeeding classes while pregnant were more likely to breastfeed (Giugliani et.al., 1994). The mothers that participated in the study attended either support groups or were in the NICU. There were thirteen mothers that were breastfeeding in the NICU. These mothers were less likely to have contact with their infants due to different medical issues. The mothers in the NICU were also with their infants less often because of long hospital stays. There were twenty five mothers that attended a breastfeeding support group. These mothers were more likely to seek out additional support because they were attending support groups on a weekly basis.

Breastfeeding Support

When comparing different types of support that was provided to mothers after birth the study showed that the most important type were the spouse and the lactation consultant. Along with other studies the spouse or father of the child is the most influential source of support on the mother when breastfeeding (Arora et. al., 2000). A spouse can have a positive influence on the initiation and duration of breastfeeding
(Giugliani et al., 1994). The study did not show an apparent influence on the mother’s initiation or duration of breastfeeding. The mothers that participated in the study ranked the father as an important reason for breastfeeding success.

The lactation consultant was an important supporter of the mother and breastfeeding in the study. The influence that a lactation consultant could have on a mother was positive in promoting breastfeeding duration (Taveras et al., 2003). The support that the lactation consultant provides is important to the mother for the logistics and ongoing support after delivery (Haas et al., 2006). These findings were not found in the study. The lactation consult was important to the mother for overall support.

The outcome of this study did show a relationship between breastfeeding support and what person is giving support to the mother. In the study medical professionals were somewhat supportive in breastfeeding success. Physician and pediatrician ranked the lowest in forms of support compared to other sources. The mothers ranked physicians as somewhat supportive when asked who had helped them with breastfeeding after delivering. Pediatricians were also ranked as somewhat important also when asked for attribution to success after delivery. In a study by Taveras et al (2003) clinician and pediatrician support lacked along with the education that was given to mothers from clinicians. The support that clinicians provide is often minimal due to poor training and overall education on breastfeeding (Dobson, 2001).

The support that mothers did not show to have influence in the subjects was WIC. The support that is offered at WIC includes breastfeeding support, nutrition and lactation
support. Of the group of mothers that completed questionnaires only two had some WIC support. Women that are of lower socioeconomic status often have lower breastfeeding rates overall (Lawrence & Lawrence, 2011). In this group of breastfeeding mothers there was no way to decipher if there was poor knowledge of breastfeeding support at WIC or mothers were unaware they qualified for WIC.

**Method of Delivery**

The type of delivery can either be vaginal or by cesarean section (C-section). When a mother begins to go into labor the hormones begin to increase and decrease. When a mother delivers vaginally there is an increase in levels of oxytocin, refer to Figure 2 (Uvnas-Moberg, 1998). If the mother delivers by C-section there is not a significant increase in levels of oxytocin (Uvnas-Moberg, 1998). The importance of oxytocin is related to the letdown of milk or the ejection of milk (Brown, 2011). When the mother gives birth by C-Section there is not a sudden increase in oxytocin levels which can have a possibly negative impact on the initiation of breastfeeding.

The method of delivery can have an impact on breastfeeding initiation if the mother has a C-section. If the mother has a C-section there is a possibility that the infant is separated from the mother after delivery which can extend the period of when breastfeeding is initiated. In the study there was significance (p<0.001) when the mother had a C-Section and was separated from baby after giving birth. There were 18 mothers that had C-Section births and 12 of those mothers were separated from their baby after
giving birth. There were no measures that showed significance of when the mother was then able to breastfeed within that first hour after giving birth.

The method of delivery also had some significance of having skin-to-skin contact within the first hour after giving birth. In the study there were 18 mothers that had C-Section births and of those ten did not have skin-to-skin contact within the first hour after birth. There was significance in the group that had C-Sections (p<0.001). The skin-to-skin contact a mother has with the infant within the first hour of life can improve the latch of the infant. Mothers in a study by Sosa et. al., (1972) found that mothers that had skin-to-skin contact within first hour after birth breastfed 50% longer than mothers that did not have skin-to-skin contact.

**Implications**

The health of future generations cannot be solely based on breastfeeding, but can be a preventative measure to decrease health risks in the future. The goals of Healthy People 2020 are to increase breastfeeding initiation rates to 81% by the year 2020, increase duration at six and twelve months to 60.6% and 34.1% respectively (CDC, 2012). The health outcomes that can be reduced in infants include reducing ear infections, gastrointestinal infections, and sudden infant death syndrome within the first year of life (Pediatrics, 2012; Stuebe, 2009). There is also a correlation to longterm health outcomes and duration of breastfeeding. The reduction of type 1 diabetes, obesity and childhood leukemia’s can be shown in breastfed infants (Kostraba et.al., 1993; Pediatrics, 2012; Kwan, Buffler, Abrams & Kiley, 2004). There is also a positive
association with breastfeeding and increased cognitive development (Dewey, Cohen, Brown & Rivera, 2000). Infants that were breastfed were more likely to walk, roll-over and lift their heads earlier than their counterparts that were formula fed (Anderson, Johnstone & Remley, 1999). The positive benefits of breastfeeding can be observed in short and long term health outcomes. By increasing breastfeeding rates in the United States there can be extended health benefits to the entire population.

The mother can also benefit from breastfeeding overall. There has been some significance short term after the mother initiates breastfeeding. There can be reduction in weight when breastfeeding is initiated (Heinig & Dewey, 1997). The mother also can have positive benefits to psychological health such as reducing post-partum depression and reducing stress (Flores-Quijano, 2008). There is also positive correlation in mothers that breastfed for a prolonged period in reducing breast and ovarian cancers, reduction in metabolic disorders and reduction in cardiovascular disease (Pang, 2007; Stuebe, 2005; Schwarz et al., 2009). The health benefits from breastfeeding are positive for both mother and infant for short and long-term health outcomes.

The support a mother receives while breastfeeding can be extremely influential. Support is most commonly from the father of the child and most important to the mother (Giugliani et al., 1994; Ingram, Jognson, Greenwood, 2001). There is a need to improve the spouse support to all mothers to encourage breastfeeding in the future. Mothers that do receive support from the spouse or father of a child are influential but it is important to know when and where the spouse can be educated on breastfeeding to improve
breastfeeding rates. The findings of the study did show that the father was an essential source of support to the mother. But, it is also important that mothers that are not having success with breastfeeding can receive the needed support.

The support from lactation consultants that a mother receives is also important for longer duration of breastfeeding (Tavaras et. al, 2003). The effects that medical professionals can have on mothers not only lactation consultants can increase breastfeeding rates. Lactation consultants can spend much more time with mothers when counseling than other medical professionals during the postpartum period (Arora, McJunkin, Wehrer & Kunh, 2000). There is necessity to having lactation consultants involved during pregnancy and post partum to offer support on breastfeeding. The mothers in the study rated the lactation consultant as an important source of support. But the mothers in the study either sought out support by attending a support group weekly with a lactation consultant or the mother had longer duration of contact due to their infant requiring a long stay in the NICU. It is important to increase the support from the lactation consultant while the mother is in the hospital to increase the initiation of breastfeeding. But hospitals often do not have staffing of lactations consultants available 24 hours a day or do not have enough lactation staff to accommodate a large amount of women. There is a need to have adequate resources to find lactation consultants at multiple periods when the mother may need increased support.

The window that medical professional have contact with the mother are often minimal but can have a greater impact because of higher education and importance
(Arora, McJunkin, Wehrer & Kunh, 2000). Therefore increasing support and education within other medical professionals such as obstetricians, physicians, pediatricians and nurses could prove to be beneficial to increasing breastfeeding among mothers.

Improving skin-to-skin contact with mothers is also of great importance to increase the connection of mother to infant. The study found that it was often common for mothers that had C-sections to not have skin-to-skin contact with the infant. Poor contact with the infant can make it difficult for the infant to latch. The importance of latching correctly and within the first hours after birth can improve the overall breastfeeding experience for the mother and infant. The overall need is to improve the contact between infant and mother when there is a C-section delivery.

**Limitations**

The study was successful at finding descriptive relationship between breastfeeding support and breastfeeding. There were limitations to the study that involved the administration of the questionnaires. The questionnaires that were provided were not successfully passed out to the target amount of participants to gain a greater understanding of breastfeeding support. However, due to the populations in the neonatal intensive care units requiring long term hospital stays it was difficult to obtain questionnaires from mothers that visited the NICU infrequently. When administering the questionnaires it would have been helpful to have the lactation consultants make sure mothers were returning the questionnaires. It would have also been beneficial to the
study to ask how long the mother was breastfeeding to find if mothers were meeting the recommendations for length of breastfeeding.

**Conclusion**

The support that mothers receive from different sources such as the spouse and lactation consultants proved to be most important to breastfeeding mothers. The effects of support on mothers can be increased by encouraging health professionals and families to provide support to mothers when choosing to breastfeed. Breastfeeding support can be increased by providing accurate information to mothers, families, the public and medical providers to increase awareness. It is important to encourage breastfeeding in mothers at multiple points of pregnancy and postpartum to ensure success.
APPENDICES
APPENDIX A

BREASTFEEDING SUPPORT FOR BREASTFEEDING MOTHERS

QUESTIONNAIRE
APPENDIX A

BREASTFEEDING SUPPORT FOR BREASTFEEDING MOTHERS QUESTIONNAIRE

Breastfeeding Support for Postpartum Mothers

Age:______  Number of Pregnancies (including this one):_____

Number of Infants Previously Breastfed:_____

1. Are you still breastfeeding? Yes  No
2. If No, When did you stop? 2 wks  4 wks  6wks  2 mo  4 mo  6 mo
   Other_______
3. What was the main reason you discontinued?

<table>
<thead>
<tr>
<th>Reasons for Discontinuation</th>
<th>Very True</th>
<th>True</th>
<th>Somewhat True</th>
<th>False</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby concerns</td>
<td></td>
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</tr>
<tr>
<td>No support</td>
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<tr>
<td>Pain/Discomfort</td>
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<tr>
<td>Not interested</td>
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<tr>
<td>Not producing enough milk</td>
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<td>Too time consuming</td>
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<tr>
<td>Return to Work</td>
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<tr>
<td>Lack of Confidence</td>
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<tr>
<td>No Where to Pump</td>
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<tr>
<td>Tired</td>
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</tbody>
</table>

4. Were you able to breastfeed within the 1st hour after birth? Yes  No
5. Were you able to do skin-to-skin with in the 1st hour after birth? Yes  No
6. Were you separated from your child after birth? Yes  No
7. Who gave you support after birth? (N/A if one of the follow individuals or groups was not part of your breastfeeding experience).
<table>
<thead>
<tr>
<th>Source of Support</th>
<th>Very Supportive</th>
<th>Supportive</th>
<th>Somewhat Supportive</th>
<th>Not Supportive</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse</td>
<td></td>
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<tr>
<td>Family</td>
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<td></td>
</tr>
<tr>
<td>Mother</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Mother-In-Law</td>
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<tr>
<td>Physician</td>
<td></td>
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</tr>
<tr>
<td>Lactation Consultant</td>
<td></td>
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<tr>
<td>Nurses</td>
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<tr>
<td>Pediatrician</td>
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</tr>
</tbody>
</table>

8. Did you see a Lactation Consultant during hospital stay? Yes  No
   How many times? ______

9. Did you see a Lactation Consultant outside of hospital? Yes  No
   How many times ___   When?__________________________

10. If you are still breastfeeding, what are the reasons for your success? Please use not applicable (N/A if one of the follow individuals or groups was not part of your breastfeeding experience).

<table>
<thead>
<tr>
<th>Reason for Success</th>
<th>Very Important</th>
<th>Important</th>
<th>Somewhat Important</th>
<th>Not Important</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your Desire to continue to breastfeed</td>
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<td></td>
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<tr>
<td>Best for Baby</td>
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<tr>
<td>Economical</td>
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<tr>
<td>Spouse Support</td>
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<td></td>
</tr>
<tr>
<td>Physician Support</td>
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<tr>
<td>Family Support</td>
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<tr>
<td>WIC Support</td>
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<tr>
<td>Lactation Support</td>
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</tbody>
</table>
11. If no longer breastfeeding, what could have motivated you to continue to breastfeed?

<table>
<thead>
<tr>
<th>Source of Support</th>
<th>Very Supportive</th>
<th>Supportive</th>
<th>Somewhat Supportive</th>
<th>Not Supportive</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse</td>
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<tr>
<td>Work</td>
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<tr>
<td>Family</td>
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<tr>
<td>Friends</td>
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<tr>
<td>Physician</td>
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<tr>
<td>WIC</td>
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<tr>
<td>Lactation</td>
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</tbody>
</table>

12. What do you feel are the most important for breastfeeding success in mothers?

<table>
<thead>
<tr>
<th>Reason For Success</th>
<th>Very Important</th>
<th>Important</th>
<th>Somewhat Important</th>
<th>Not Important</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse Support</td>
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<tr>
<td>Family Support</td>
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<tr>
<td>Support at Work</td>
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<tr>
<td>Physician Support</td>
<td></td>
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<tr>
<td>Lactation Support</td>
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<tr>
<td>Social Support</td>
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<tr>
<td>Other:</td>
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</tbody>
</table>
13. Did you attend any breastfeeding classes during your pregnancy? Yes  No
14. Do you have prior breastfeeding experience? Yes  No
15. What was your method of delivery? C-section  Vaginal
16. Do you have a family member or close friend that has breastfed? Yes  No
17. Race: African-American  Hispanic  Caucasian  Asian  Other
18. What is your highest education level?  Less than Highschool  Highschool  Some college  Completed College  Higher Degree
19. Average Household Income.
   ___ Less than 20,000 a year
   ___ 20,000- 40,000 a year
   ___ 40,000- 60,000 a year
   ___ 60,000-80,000 a year
   ___ 100,000 and above
APENDIX B

BREASTFEEDING QUESTIONNAIRE INFORMED CONSENT FORM
Study Title: BREASTFEEDING SUPPORT AND HOW IT INFLUENCES BREASTFEEDING RATES

Principal Investigator: Natalie Caine-Bish and Loreen Nodo

You are being invited to participate in a research study. This consent form will provide you with information on the research project, what you will need to do, and the associated risks and benefits of the research. Your participation is voluntary. Please read this form carefully. It is important that you ask questions and fully understand the research in order to make an informed decision. You will receive a copy of this document to take with you.

**Purpose:** To gain a better understand at how breastfeeding support can help with better initiation rates and better duration rates.

**Procedures:**
You will receive a survey from your support group and will be given time to fill out the survey. You will be able to ask questions about the survey at any time to the research personnel on clarification of a question. You may also contact either of the researchers if you chose to fill out the survey at home.

**Risks and Discomforts**
The risks of this study are minimal you may chose to not participate if you feel you are being pressured to breastfeed for a longer time. The risks can be emotional discomfort because you may feel pressured to fill out the survey. You may also feel that you are emotionally distressed because the survey is asking you to specify who your largest supporter of breastfeeding is in your life.
Privacy and Confidentiality
This survey is completely anonymous, your name will not be used for any purpose whatsoever. If you feel that your privacy is at risk please do not fill out the survey.

Voluntary Participation
Taking part in this research study is entirely up to you. You may choose not to participate or you may discontinue your participation at any time without penalty or loss of benefits to which you are otherwise entitled. You will be informed of any new, relevant information that may affect your health, welfare, or willingness to continue your study participation.

Contact Information
If you have any questions or concerns about this research, you may contact (Principal Investigator) at (campus phone number) or (Advisor’s name, if PI is a student) at (advisor’s phone number). This project has been approved by the Kent State University Institutional Review Board. If you have any questions about your rights as a research participant or complaints about the research, you may call the IRB at 330.672.2704. I have read this consent form and have had the opportunity to have my questions answered to my satisfaction. I voluntarily agree to participate in this study. I understand that a copy of this consent will be provided to me for future reference.

________________________________  ____________________
Participant Signature               Date
REFERENCES


