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Jacquelyn Andrews
Best for Baby: What factors
Influence New Mothers When
Choosing between Breastfeeding and
Bottle Feeding Babies under the Age
of Two?

ABSTRACT

Mothers often find themselves under supported after the birth of a baby. This mixed method research study examines the factors that are considered influential to new mothers when making their initial infant feeding choice between breastfeeding and bottle feeding. This study presents the data from 1017 mothers who self identified as either primarily breast feeding mothers or bottle feeding mothers and indicated which biological, social, circumstantial, financial, psychological, and medical factors were the most influential in their choice.

Both the breastfeeding and the bottle feeding samples consistently ranked health of the baby as the most influential factor. Bottle feeding mothers stated that the primary reason they chose to bottle feed was either low milk supply or inability to latch, both of which can be drastically improved through proper support both within the lactation professional capacity and in social policies that target supporting mothers.

**BEST FOR BABY: WHAT FACTORS INFLUENCE NEW MOTHERS WHEN
CHOOSING BETWEEN BREASTFEEDING AND BOTTLE FEEDING BABIES UNDER
THE AGE OF TWO?**

A project based on independent investigation in
partial fulfillment of the requirements for the degree
of Master of Social Work

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And finally, to the incredible 1017 mothers who took the time to participate in my survey I am incredibly humbled and grateful. Those women astounded me with their raw honesty about how impossible it is to attain perfect-mother status and how vital it is to simply choose to be a good-enough one.

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Chapter1: Introduction

Mothers are faced with difficult decisions every day. Some of those decisions can be emotionally and physically exhausting and painful. For new mothers, choosing how and what to feed their newborn babies is one of the most personal and important decisions they face. Having some type of support through this decision seems to be crucial competent to making a choice that the mother finds satisfactory and fulfilling. Otherwise she may feel pressured, depressed, or guilt about her feeding choice.

This researcher was motivated to ask the question “what factors influence new mothers when making their primary feeding choice between breastfeeding and bottle feeding in infants under age 2” based on personal experience and shared experience with other mothers. As a mother of three children living far from extended family, the researcher and partner experienced a lack of support with the raising of their children, particularly in infancy. It is the belief of this researcher that with enhanced support and education, mothers may find their infant feeding choice more enjoyable and empowering. Therefore, as medical and social agencies become aware of influential feeding factors for new mothers, those agencies can more accurately attune their support where it actually matters-- fortifying the factors which influence the new mothers the most.

Because of the reasons listed above, this study examines what factors influence new mothers when making their feeding choices for infants under the age of two years old. While it may seem that the conversation “breast versus bottle” is “antiquated because formula feeding and breast feeding are equals and this question only serves to polarize women”, as one

participant stated, many others stated that the research and knowledge of individuals in helping professions (doctors, nurses, social workers, lactation consultants) was an invaluable support regardless of how they chose to feed their infants. Still others stated that the lack of professional knowledge and support was devastating and had some women had this opportunity they would have made a different feeding choice. One participant stated “I felt horrible, I was letting my daughter down” about her chosen feeding method. The purpose of this research is to identify methods of support for all feeding options to help eliminate the “horrible,” “pressured,” “and “depressed” experiences that these women dealt with in making their feeding choice.

While there are many feeding choices available to new mothers including but not limited to breastfeeding, bottle feeding of formula, combination feeding, skin-to-skin bottle feeding, expressed breast milk, donor milk, and wet nursing, this research narrowly focuses on how mothers predominantly self identify as either bottle feeding or breastfeeding. Participants in this study were given the opportunity via one open ended question to write in their thoughts at the end of the survey and some shared such feeding experiences as “bottle feeding expressed milk during the day and skin to skin breastfeeding at night, so I consider my daughter EBF even though she had bottles” (EBF being common parenting lingo for exclusively breast fed). Although there are many other viable feeding options, this survey focused on how mothers *self identify*, as primarily breastfeeding or bottle feeding. Meaning, the participant who stated she bottle fed in the day and breastfed at night was encouraged to identify as she saw herself, a breastfeeding mother.

The benefits of breastfeeding are well documented and many organizations (such as the World Health Organization (WHO); American Academy of Pediatrics (AAP); and Centers for

Disease Control (CDC), suggest breastfeeding exclusively for the first six months of life and ideally continuing to breastfeed up to two years and beyond. However, breastfeeding exclusively is not always feasible, desirable, or ideal for new mothers. In this case, mothers choose to bottle feed their newborns formula, pumped breast milk, and, in increasing numbers, donor milk. Although there is widespread data showing that typically “breast is best,” in many cases it can depend strongly on the individual family circumstances what is best for each baby, each mother and each family.

The decision to breast or bottle feed is often made before conception. Some mothers have a strong personal conviction either to breast or to bottle feed. Others choose during pregnancy or in the early days of motherhood based on experience, support available, and need. Age of the mother is a highly influential aspect in how one chooses to feed with research suggesting that young mothers are far more likely to bottle feed than are older mothers.

Socioeconomic status (SES) is also a predictor of feeding choice, as statistically those with higher SES are more likely to breastfeed and those with lower SES being more likely to bottle feed (WHO, 2001). This is interesting because many breastfeeding mothers state in this survey that cost of formula and “breast milk is free” are major influential factors to choosing breastfeeding over bottle feeding. Many formula feeding mothers stated a need to go back to work as their primary reason for bottle feeding. It seems that for some mothers the economic disparity of lower socioeconomic class actually results in an increased necessity to spend money on formula, bottles, and feeding supplies in order to enable them to return to work. Meanwhile, mothers who reported not facing a need to return to work showed an increase in the free feeding choice—breastfeeding.

Within the scope of this research not all elements of feeding can be explored. While the researcher acknowledges that feeding styles around the world vary it is not possible to contain all cultural views of feeding within the scope of this research. Also not examined are parenting experiences where there is not a lactating parent involved and the breastfeeding option is therefore not viable.

How mothers make this vital feeding choice is a personal and sometimes sensitive decision. New moms may feel pressured to feed their infants one way or the other. There is public stigma both on breastfeeding in public and on feeding babies formula. As one participant stated “I just couldn’t imagine being comfortable taking my breasts out in public and he was hungry, so I bottle fed.” This research asks the question: what factors influence new mothers’ infant feeding choices. The goal for this research is to better help support moms in their feeding choices regardless of what choice they make.

Chapter 2: Literature Review

There is much research and debate on the subject of infant feeding choices. Research suggests there are many factors that influence the choice new mothers ultimately make in how to feed their infants. Research states that “best for baby” is the most cited reason for breastfeeding, while convenience is the most cited reason for bottle feeding (Sloan, 2006). This literature review explores the research published regarding various elements of the complex issue of the infant feeding choice debate.

The first section of this literature review will focus on the greater infant feeding question: breast versus bottle in general. Studies presented include research from the United Kingdom on how mothers make their feeding choice. Presented is literature on the so-called “mommy wars” that influence the breast or bottle question.

The second section discusses theories and factors influencing the debate. Research presented includes a feminist stance on feeding choice, the role of culture on mothers’ attitudes about feeding, and the role that professionals take in influencing the decision. The stated positions on the optimal feeding method for infants of physicians (OBGYNs, family practice, and pediatricians), as well as of lactation consultants, is presented here. This section also focuses on organizational policy’s influence on feeding options. Here the researcher explores the position of the World Health Organization, American Academy of Pediatrics, and the Baby Friendly Hospital policy.

The next two sections take an in-depth look at bottle feeding and then breast feeding independently. The argument for each feeding choice is laid out individually. The benefits associated with each are addressed.

The final section explores feeding issues that are outside of the standard realm of what is expected in feeding. Feeding issues outside of the typical scope of what the average mother expects from infant feeding can greatly impact new mothers' feeding options. Bottle feeding can lead to painful baby bottle tooth decay (also known as *infant caries*). This is an issue bottle feeding mothers must deal with that does not affect breast feeding mothers. Families without a lactating mother don't have the option and must find a bottle feeding option that suits them. Mothers who are active duty military have options to breastfeed in uniform if they choose to do so, however the policy lacks a convenience factor. In this way, service member mothers have their feeding choice somewhat pigeon holed to bottle feed purely for convenience. Mothers who are incarcerated often are not given the option of breast feeding and it is another caregiver bottle feeding her infant. These can all be difficult issues for new mothers to face.

Breast vs. Bottle: Making the choice

There is a trend in parenting that has come out of our highly competitive age and it's being called "mommy wars." The mommy wars narrative was started in 1989 when Felice Schwartz published an article in the *Harvard Business Review* called "Management Women and the New Facts of Life," also known as the "Mommy Track" report (Grufferman, 2012). The article stated that some women focus on careers, while others choose to have families, possibly removing themselves from the workforce for a number of years. The article gave the idea that

there were two opposing camps of women, working women and mothers. This ignited the debate between moms that is very often highly charged (Grufferman, 2012). Some elements of the mommy wars include choices relating to circumcision, diapering, stay at home parenting, and of course infant feeding. This mommy war attitude pits breast feeding mother against bottle feeding mother as though the two were mutually exclusive.

Sloan et al. conducted research in the United Kingdom to determine why British mothers choose to breast or bottle feed. The research used home visit studies to interview 274 mothers who had given birth at full term (38-42 weeks gestation). The interviews took place over the course of the infant's first 12 months of life. The research sample consisted of 14% single mothers and 86% mothers in two parent households. In total, 92% of the mothers fed the method they had chosen before giving birth no matter what that method choice was. The research concluded that mothers who breastfeed did so because they feel that it is "best for baby" in terms of health and psychological benefits and that mothers who bottle feed are most compelled by a family need for the mother to return to work after giving birth (Sloan, 2006). This suggests that mothers are compelled to make their feeding choices based on their preferences, personal situations and feasibility, and their general beliefs about breast and bottle feeding before the child is even born.

Feminist Theory: The *Other* "Right to Choose"

Many women feel pressured by both camps when it comes to making the choice between breast and bottle. However, feminist perspective suggests seeing the issue in light of

reproductive health and the woman's right to choose. In her article on breastfeeding and feminism, Farryington likened the breast vs. bottle battle to the abortion debate stating:

The notion that "breast is best" simply because it's natural sounds ringingly similar to the arguments made by pro-lifers and even contraception opponents, all of which begin with the same basic premise: women should be shackled to their corporeal destinies (Farryington, 2012).

Fairyington states that the pro breastfeeding rhetoric reinforces the idea of seeing women only in respect to their reproductive duties and that imposing breastfeeding beliefs silences women's fundamental right to choose the nature of her reproductive preferences including feeding options.

Annually, there is a Breastfeeding and Feminism Symposia in Chapel Hill, North Carolina. This symposium was started with the purpose of making breastfeeding a women's advocacy and feminist priority in the area of women's reproductive rights (Labbok et al, 2008). The goal is to increase awareness of breast feeding as a feminist issue and to encourage breastfeeding advocacy organizations and individuals to partner with women's reproductive rights organizers to add to the attention breastfeeding gets from feminist groups. They ascertain that breast feeding is a fundamental human right the mother and the children both deserve (2008). They focus not only on the mother's right to choose but the mothers' right to have the supports in place necessary to make an informed choice. These supports include free, accessible breastfeeding education and the creation of breast feeding friendly employment policies for working mothers with the goal that working moms will have more freedom of choice if they are

supported to do so by their employers (2008). Without these supports in place, mothers often have no choice in their feeding options.

The Role of Culture

Qualitative research from Saint Paul, Minnesota, studied Hmong mothers living in the area and their infant feeding choices. 21 Hmong mothers were interviewed about the factors that influenced their infant feeding choice. This research found that recent immigrants were more likely to bottle feed their infants citing cultural stress of relocating and navigating the American cultural norms as one particularly influential factor. Another factor cited by recent Hmong immigrant mothers for bottle feeding as a preference was uncertainty about the cultural norms around breast feeding in public. However, second generation Hmong women were much more likely to breastfeed than to bottle feed. They cited their motivation came from the modelling of other mothers around them breastfeeding and included the support of Hmong American peers such as sisters and sisters-in-law (Feliciano, 2011).

Conversely, research suggests that women who come to the United States from Mexico, a country with a relatively high rate of breastfeeding, experience lowered rates of breastfeeding when in the United States for longer duration of time (Harley, 2007). 490 Mexican women living in California were interviewed during pregnancy, shortly postpartum, and when their child was 6 months, 1 year, 2 years, and 3.5 years of age. Results indicated that the number of increased years of being in the United States was associated with decreased initiation of breastfeeding and shorter duration of exclusive and any breastfeeding. The results of the study are detailed as follows.

Median duration of exclusive breastfeeding was 2 months for women living in the U.S. for 5 years or less, 1 month for women living in the U.S. for 6 to 10 years, and less than one week for women living in the U.S. for 11 years or more, or for their entire lives (lifetime residents). After controlling for maternal age, education, marital status and work status, lifetime residents of the U.S. were 2.4 times more likely to stop breastfeeding, and 1.5 times more likely to stop exclusive breastfeeding, than immigrants who had lived in the U.S. for 5 years or less. (Harley, 2007).

This research suggests that Mexican American mothers change their feeding styles with their life in America and bottle feed more than they may have done in Mexico. This study did not gather information about social supports, partner role, or factors that influenced the mothers. Additional research on the phenomenon would be beneficial in supporting Mexican American immigrant mothers.

Professionals' Influences on feeding choices

According to the American Academy of Family Physicians (AAFP), "breastfeeding is the physiological norm for both mothers and their children" (AAFP, 2013). They state that breastmilk offers superior medical and psychological benefits that are not available from infant formulas. The AAFP recommends that, except when not medically indicated, all infants should be breastfed exclusively for the first six months of life and supplemented with food but

continued for the first two years (2013). They state “family physicians should have the knowledge to promote, protect, and support breastfeeding” (2013).

With this strong recommendation from the AAFP, it seems as though family physicians should receive proper training to support new moms in making their feeding choice. In research involving physicians’ role in educating new mothers on their feeding options, researchers found that physicians receiving breastfeeding education and exploring breastfeeding barriers to be among the most strategically significant methods of increasing US breastfeeding rates. Krogstrand and Parr (2005) sampled 677 physicians with a survey asking the doctors about breastfeeding promotion and support among their patients. A total of 262 of the doctors (OBGYN, family practice, and pediatricians) completed the survey. Of those responding, 51% reported that they had received “little to no” breastfeeding training or education yet 81% stated that they felt the physician has a “primary role” in the mother’s decision to as to whether to bottle feed or to breastfeed. 85% of the physicians stated they strongly advocate for breastfeeding over bottle feeding, yet over half feel they have been ‘insufficiently or inadequately” trained on breastfeeding counseling and stated they therefore rely on preprinted breastfeeding literature to hand out to patients as opposed to having open dialogue with new mothers about the benefits of various feeding options (2005)

Alternatively, there has been an increase in the private use of lactation consultants for new mothers (Hoag Dann, 2005). If breastfeeding is difficult in the early days, mothers’ ability to breastfeed becomes impaired. Lactation consultants can ease this burden for new mothers and provide education and support the mother may be lacking otherwise. The initial latch of the nursing infant to the mother’s breast is key in developing the codependent breastfeeding

symbiosis between mother and baby. Lactation consultants can identify and give support to rectify latch problems and early lactation issues before they become major barriers to breastfeeding. Hoag Dann states that if breastfeeding causes the mother any pain, the latch is likely incorrect and can be easily remedied with gentle, patient support.

Baby Friendly Hospitals and the Ten Steps

With such evidence proving that medical professionals do have a say in how women choose to feed their babies, it is important to question how hospital policies are using that influence. One way of supporting this initiative is the baby friendly hospital policy and the ten steps to successful breastfeeding. The baby friendly hospital initiative was launched in 1991 by the WHO and Unicef as the gold standard in hospital infant feeding policy. It reinforces breastfeeding as a priority and safe bottle feeding if necessary. Part of the baby friendly initiative is the ten steps to successful breastfeeding which must be adhered to in order to be and remain a certified “Baby-Friendly” hospital and/or birthing facility. The ten steps are:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in the skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within one hour of birth.
5. Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants.
6. Give infants no food or drink other than breast-milk, unless medically indicated.
7. Practice rooming in - allow mothers and infants to remain together 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no pacifiers or artificial nipples to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or birth center. (babyfriendlyusa, 2012)

Investigators in Oregon surveyed maternity hospitals to find out about their infant feeding influence policies (Rosenberg, 2008). This 2008 study published in the *Journal of Midwifery and Women's Health* examined the relationship between the Ten Steps and breastfeeding at 2 days and at 2 weeks. Investigators surveyed all Oregon maternity hospitals (N=57) and conducted face-to-face interviews of new mothers in small groups of 3-8. The hospital's compliance with the ten steps initiative was rated as poorly compliant, moderately compliant or highly compliant. 26.3% of hospitals in the state received a score of highly compliant. The study showed that the hospitals that were most compliant with even part of the ten steps (namely rooming in and encouraging no supplementation or formula-related discharge materials) were related to higher rates of breastfeeding at 2 days and at 2 weeks. The study found that the lowest compliance rates with the ten steps were associated with the lowest breastfeeding rates.

If the “ten steps” is so clearly linked to breastfeeding success, one might wonder why it is sometimes difficult for hospitals to comply fully with the entirety of the ten steps protocol. Baby friendly USA details some of the common barriers to implementation of the ten steps in existing hospitals and birth centers. Some of these barriers listed include but are not limited to:

resistance to new policies and practices, lack of support from key sectors (e.g., administrative, managerial, medical, nursing, etc.) to create a forum for discussing and revising policy, concern about the potential financial costs, concerns about staff coverage and training, disagreement about the validity or importance of the Ten Steps, lack of monitoring to indicate if practice is in keeping with policy, routine practice of separation of mother and infant for routine medical care,

cleaning and checks in the first hour of life and the belief of such practice's priority. (babyfriendly usa, 2012).

Babyfriendly USA publishes literature with strategies to help combat and ease these barriers so that the ten steps can be implemented properly without barriers.

WHO and AAP Recommendations

Despite research promoting breastfeeding, the United States has a relatively low exclusive breastfeeding rate according to the World Health Organization (WHO), with 77% of new mothers attempting breastfeeding at any point in time and only 49% of mothers exclusively breastfeeding at the WHO recommended six month mark. This year, the CDC reports a recent trend of rising initial breastfeeding rates in the United States with 77% of new mothers initially breastfeeding their infants. At six months of age, the WHO recommended minimum for breastfeeding duration, that "high" percentage drops down to 49% of infants still breastfeeding. While the trend is positive, the CDC goal for 2020 is an initial breastfeeding rate of 81%.

The World Health Organization recommends on-demand breastfeeding exclusively for a minimum of six months and suggests breastfeeding as part of the child's whole diet for two years. They suggest breastfeeding to begin within the first hour of life and to not be supplemented with formula, water, or pacifiers. Breast milk promotes sensory and cognitive development, and protects the infant against infectious and chronic diseases. They state that breastfeeding helps to facilitate mother and infant bonding and is associated with lifelong psycho-social development.

Despite its official stance that babies should breastfeed exclusively for the first six months and continued on for the first two years of life, the American Academy of Pediatrics has recently allowed its name and logo to be used on the hospital maternity bags routinely given to new moms after delivery and traditionally containing free formula and formula coupons. The bags are sponsored by Mead Johnson, makers of the infant formula Enfamil. Studies show that women who do not receive the bags are more likely to breastfeed for beyond 10 weeks than women who receive the bags, which makes the AAP endorsement of the bags seem to be a mixed message to both new mothers and birthing professionals from the AAP. Further compounding the issue is the likelihood of the bags to be distributed in lower income hospitals. The states of Massachusetts and Rhode Island as well as 67% of the nation's top 45 hospitals have eliminated the practice of distributing the bags. As the hospital rankings rise, so does the percentage of eliminated bags, with 14 of the nation's top 17 hospitals eliminating the bags (82%) In the rest of the country, however the bags are still a routine going home gift for new moms, with only 24% of the entire rest of the nation's hospitals banning the bags.

The Benefits of Bottle Feeding

Research conducted by Feminists for Life campaign (FFL) suggests that bottle feeding can be a preferred feeding choice for some mothers (Balash et al, 2013). Bottle feeding is a safe and nutritionally sound method of infant feeding. Formula feeding gives the mother a break in taking on the entirety of the responsibility for feeding the infant. This is because the father, partner, and other members of the family support system can give the infant a bottle giving the mother much needed rest time. In this way, mothers are given some reprieve from childcare

(2013). Mothers will then have increased choices in their daily life as they are not the sole provider of food for their infants.

Bottle feeding can also be affordable. Many formula companies offer discounts, coupons, and promotions (Balash, 2013). Also, hospitals and pediatricians may provide free samples and coupons if requested by the mother (2013). Formula is available through social services agencies, WIC, and food banks for free to mothers who qualify for assistance. This can greatly benefit working mothers struggling to make ends meet (2013).

Enfamil states on its website that it is designed with the inspiration of breast milk (Enfamil, 2013). It states that it is more like breast milk now than in previous incarnations of the formula recipe. The formula company offers many varieties of infant formula to address particular feeding issues, such as a special formula to reduce colic, spit up, gas, and general crying, as well as specialized formulas for newborns, infants and toddlers. The company reports that these formulas are designed to provide complete nutrition for babies. The formula brand states that it is the number one brand of formula recommended by pediatricians.

The Science Behind Formula

According to the Mayo Clinic, infant formula is regulated by the FDA and comes in three types: cow's milk, soy based, and protein hydrolysate.

- Cow's milk formulas. Most infant formula is made with cow's milk that's been altered to resemble breast milk. This gives the formula the right balance of nutrients — and makes the formula easier to digest. Most babies do well on cow's

milk formula. Some babies, however — such as those allergic to the proteins in cow's milk — need other types of infant formula.

- Soy-based formulas. Soy-based formulas can be useful if you want to exclude animal proteins from your child's diet. Soy-based infant formulas might also be an option for babies who are intolerant or allergic to cow's milk formula or to lactose, a carbohydrate naturally found in cow's milk. However, babies who are allergic to cow's milk might also be allergic to soy milk.
- Protein hydrolysate formulas. These types of formulas contain protein that's been broken down (hydrolyzed) — partially or extensively — into smaller sizes than are those in cow's milk and soy-based formulas. Protein hydrolysate formulas are meant for babies who don't tolerate cow's milk or soy-based formulas. Extensively hydrolyzed formulas are an option for babies who have a protein allergy. (mayoclinic, 2013)

The Mayo Clinic states that infant formula, when properly prepared, provides infants with all of the necessary nutrients to facilitate healthy growth and development. Formula comes either in a powdered form to be mixed with water or a liquid, premade form. All infant formula, powdered and liquid, must meet the nutrient standards set by the Food and Drug Administration (FDA). Although the various formula brands (such as Similac, Enfamil, and others) vary slightly from one another in their individual recipes, the FDA requirement states that all infant formulas must contain at least the minimum recommended amount of all nutrients that infants need not to exceed the maximum recommended amount (Mayo Clinic, 2013).

Some formulas contain additional nutrients not mandated by the FDA. These nutrients include iron, arachidonic acid (AHA), docosahexaenoic acid (DHA), prebiotics, and probiotics. The claims by infant formula manufacturers that these additives are beneficial are highly debated in the infant feeding community. Some of the additives are potentially preferable for brain and eye development. Formula companies claim that Pre- and Pro-biotics added to formula might aid in digestion and thereby decrease fussiness. The Mayo Clinic states that the long term effects of these additives are unknown although there are some optimistic results in early studies on these additives. Additionally the Mayo Clinic suggests mothers buy an iron fortified infant formula, as not all formulas are rich in iron and this vital nutrient is proven to aid in growth and development.

Mothers' Experience of Bottle Feeding

A qualitative study of 19 exclusively bottle feeding mothers illuminated themes in mothers' choices to bottle feed. Mothers in this study were age 18+ and had a child born at full term, defined as equal to or more than 38 weeks gestation, whom they chose to bottle feed. A common theme in this research was that mothers who chose to bottle feed felt their choice was right for their family but felt that society judged them for not breast feeding. These mothers chose bottle feeding for many reasons. The reasons included convenience, the need to take care of other children, the need to allow the father to participate in feeding, better sex when bottle feeding, and having more "settled" babies due to the heaviness of formula and a worry that breastfed babies may not be getting enough milk. The mothers' perceived inconvenience of breastfeeding was also a concern. This included the mothers' fears of breastfeeding in public, their feeling that breastfeeding accessories (such as bras, pumps, and ointment for soreness)

would be expensive and an inconvenience to purchase, and the fear of being less sexual if they were to breastfeed.

Australian research (Williams et al, 2013) on the subject of bottle feeding and guilt found that mothers who choose to bottle feed often feel that they are overwhelmed by breastfeeding promotion and the advice to not feel guilty about their choice. The sample of 35 Australian mothers with exclusively bottle fed children under the age of 2 found that 100% of these mothers experienced the advice from friends, family, medical professionals, or strangers “don’t feel guilty” about not breastfeeding. This unsolicited advice gave the impression to these mothers that bottle feeding was a reason to experience guilt and that, by not breast feeding, these mothers were missing some “good mothering” experiences.

The Benefits of Breastfeeding

Breastfeeding has numerous long and short term benefits both for mother and baby (WHO, 2012). The increase in skin to skin contact experienced for breastfeeding mothers and breastfed babies is one of the first benefits baby and mother both experience. This experience is known to decrease crying and increase bonding (WHO, 2012). The WHO states that breastfed babies receive optimal nutrition, are also less susceptible to childhood illnesses such as pneumonia, diarrhea, and diabetes as well as obesity, and have lower risk of infection.

Breastfeeding is known to be the most effective way to decrease risk of gastrointestinal infection in babies less than one year old (WHO, 2001). Breastfeeding is also known to decrease risk of sudden infant death syndrome (SIDS) and other forms of infant mortality (Gartner, 2005).

For mothers there also is evidence of benefits from breastfeeding. Mothers who breastfeed for at least the recommended six months post-partum experience 15% less risk for Type 2 diabetes (Steube, 2005). Mothers who breastfeed experience a faster return to pre-pregnancy weight, lowered risk for breast and ovarian cancer and some research suggests that breastfeeding mothers experience less stress than bottle feeding mothers in the first year of motherhood (NRDC, 2012).

Immediately after birth, the repeated suckling of the baby releases oxytocin from the mother's pituitary gland (Gartner, 2005). This hormone not only signals the breasts to release milk to the baby (this is known as the milk ejection reflex, or "let-down"), but simultaneously produces contractions in the uterus. The resulting contractions prevent postpartum hemorrhage and promote uterine involution (the return to a non-pregnant state) (2005).

The benefits of breastfeeding are most profoundly experienced when the baby breastfeeds with skin-to-skin maternal and baby contact. The skin to skin contact that breastfeeding provides gives the baby many benefits that are not available without skin to skin contact, particularly the increased milk supply mothers experience from the contact (Haxton, 2012). These benefits include the infant's psychological comfort of hearing mother's heartbeat again, which can promote bonding, as well as the mother's greater release of oxytocin which also promotes bonding (Haxton, 2012). Skin to skin contact results in a stabilized body temperature, regulates the breath rate, heart rate, and blood sugar levels of infants and can familiarize the baby with mom's bacteria which helps prevent allergic diseases (Haxton, 2012). With preemies, it can reduce the need for extra oxygen intake (Haxton, 2012).

Breastfeeding promises significant cost savings compared to formula feeding: according to the US Department of Agriculture, the USA would save a minimum of \$3.6 billion per year in health care and indirect costs if at least 75% of mothers initiated breastfeeding, and 50% breastfed until the infant is at least 6 months old (USDA, 2006). The USDA also states that this figure is likely underestimated because it only factors in the medical costs for three preventable childhood diseases and not the actual cost of formula, bottles, feeding accessories, or the exponential other cost benefits that would likely come from mother and child increased health due to breastfeeding.

As well as health benefits, there are also environmental benefits for the Earth. There is a major sales market for bottle feeding. Without the use of plastic bottles, rubber nipples, pacifiers, formula manufacturing, packaging, and distribution a large portion of waste is eliminated from the environment, making breastfeeding the most environmentally friendly feeding choice.

In 2006, John and Helen Britton conducted a study to determine maternal sensitivity towards responding to the cues of her child and the child's attachment as it correlated with breastfeeding. Their longitudinal cohort study of 152 mothers examined mothers' sensitivity to the mother-infant dyadic relationship and the infant's attachment to the mother up to the first year of life. The study found not only that mothers who breastfed were more sensitive in their interactions with their infants, but also that mothers who breastfed the longest were significantly more sensitive to their infants than those whose breastfeeding duration was shorter (Britton, 2006). However although the mothers were more sensitive when breastfeeding, there was no relationship between breastfeeding exclusively and a secure attachment to the mother. Instead,

the study found that the quality of the interactions in the dyad was more important to the attachment patterns than was the choice of feeding method (Britton, 2006).

Paid Parental Leave and Breastfeeding

An Australian study (Cookin, 2012) concluded that paid maternity leave was an important factor in breastfeeding rates and duration. This study found that with increased education, maternal age, and average age at first birth came lower breastfeeding durations. The study found that these factors were associated with a higher percentage of mothers returning to work shortly after birth and that women who return to work rapidly experience less convenience for breastfeeding. Women who were allowed longer paid maternity leave (12 weeks) without risk of losing their jobs were more likely to breastfeed longer without the worry of returning to work so quickly. Currently, access to such generous maternity leave is limited to only higher socio-economic class positions and the women in the lowest paid positions receive little to no paid maternity leave (2012).

Research published in the journal *Pediatrics* also finds that increasing and regulating policy surrounding maternity leave increases breastfeeding rates and duration (Ogbuanu, 2011). The study investigated 6,150 mothers who worked before birth and had singleton births, with infants born between 38-42 weeks gestation. In this study it was found that 69.4% of all of the new mothers initiated breastfeeding, with higher rates in the individuals with some maternity leave in place (2011). It found that women who waited at least 13 weeks after delivery to return to work had longer breastfeeding durations overall.

Feeding Issues and Challenges

A common medical issue in newborns has been shown in studies to be a barrier to breastfeeding. Ankyloglossia, commonly known as “Tongue Tie,” is a condition affecting approximately 4-10% of all newborn babies (Segal et al, 2007; Ricke et al, 2005) and is defined as a condition resulting in the underside of the tip of the tongue being attached to the bottom of the mouth with a thick band of tissue known as the lingual frenulum. Studies show this condition has a negative effect on breastfeeding. Ricke et al studied 500 babies with tongue tie to determine the effects of the condition on feeding and infant’s ability to thrive. Interestingly, they found that tongue tie appeared to happen more in male babies than in female babies at a rate of 2.1:1 (Ricke et al, 2005). They found that tongue tied infants were three times as likely as normal tongued infants to be bottle fed at one week and that this gap decreases somewhat yet continues at one month of age, where both tongue tied and normal tongue babies have lower rates of breast feeding (Ricke et al, 2005). Poor latch and nipple pain were the reasons most commonly given for bottle feeding infants with tongue tie (Ricke et al, 2005). Infants given successful frenotomy (snipping of the lingual frenulum to free the tongue), and additional lactation support were cited as potential methods of supporting mothers of tongue tied babies in their feeding choice.

Segal et al state in their study on tongue tie and breastfeeding that for each day new mothers experience pain in the first 3 weeks of breastfeeding, there is a 10% to 26% increased risk of stopping breastfeeding (Segal et al, 2007). Segal et al state that one of the challenges to providing adequate care is the difficulty in diagnosing tongue tie as many babies’ tongue tie goes unnoticed and mothers simply feel they are not able to breastfeed and therefore switch to bottle feeding, a method easier for tongue tied babies to adequately receive nutrition. They suggest

increased diagnostic capability for medical professionals and increased lactation support for mothers of tongue tied babies (Segal et al, 2007).

An Australian (Freeman & Stevens, 2008) study examined the relationship between 34 mothers and their infants who experienced prolonged bottle feeding (to aged 3-4) and as a result had baby bottle tooth decay. The mothers were aged 23-40 with an average age of 30 and they had 1-7 children each. The children with the baby bottle tooth decay were typically the first or second born in the family and the only child in the family with the tooth decay. These mothers experienced guilt and felt to blame for their infant's tooth decay. Baby bottle tooth decay is a type of tooth decay that occurs due to bottle feeding for long periods of time such as overnight. The milk settled on the baby's teeth and results in painful decay and broken discolored teeth. Research suggests that assisting mothers to overcome issues of mothering anxiety and being overwhelmed by not having enough time will promote both a decrease in baby bottle tooth decay and a decrease in mothers' guilt, thereby increasing perceived mothering satisfaction.

Active Duty military mothers face a unique set of challenges and issues when deciding on how to feed their infants. The Air Force revised its infant feeding policy in 2012, making clear, for the first time ever, that there is a need for a non-bathroom private room to be made available for mothers and also authorizing pumping breaks of 15-30 minutes every three to four hours given that the mother is not deployed. The optional deployment deferment period is six months, with the recommendation at the commander's discretion to allow for 12 months. This means that the Air Force will allow a new mother six months to not deploy after childbirth. However, stateside active-duty new mothers are not exempt from field training or mobility exercises, thus seriously limiting military moms' viable feeding choices.

HIV+ mothers who have safe, affordable, reliable access to formula are encouraged by the WHO and the CDC to formula feed their infants. This means that the mother has access to clean, safe drinking water and a sustainable source to get formula (CDC, 2013). While the risk of HIV transmission is relatively low (5-20% risk of infection of the newborn), it is deemed generally preferable to avoid the risk altogether by bottle feeding these infants (WHO, 2013).

Until 2006, worldwide all women with HIV were recommended to bottle feed their infants (WHO, 2012). This proved to be a difficult endeavor in places where formula feeding was not readily and safely available. The WHO now recommends exclusive breastfeeding even in the case that the mother is HIV+ if formula feeding is not safe and accessible; for example if there is not clean drinking water readily available with which to mix the formula (2012). Until 2010, the WHO recommended breastfeeding until six months of age, this early cessation of breastfeeding is now not recommended and instead lactation experts are recommending HIV+ mothers breastfeed exclusively for as long as desired. The former recommendation of bottle feeding infants when the mother is HIV+ was found to not decrease HIV rates whatsoever in high level HIV areas of Africa, therefore the recommendation has been ceased in such areas (2012).

A 2012 study found that one in eight low income families will resort to watering down formula to make it stretch until the end of the month, when more is typically available through WIC or food stamps (Carroll, 2012). Andrew Beck at the Cincinnati Children's Hospital Medical Center asked 144 low-income parents to take a 37 question survey about infant feeding needs and socioeconomic status. The research found in this study that 65% of families ran out of WIC provided formula before the end of the month (2012). It also found that some of these parents

were resorting to watering down the formula to make it stretch till the end of the month. Dr. Beck states that this is a dangerous practice and can easily result in the infant's failure to thrive (2012).

According to the CDC, bottle feeding is medically recommended as the prescribed feeding method only in rare cases such as where the infant is diagnosed with galactosemia, a rare genetic metabolic disorder. Bottle feeding is also medically recommended when the mother is taking antiretroviral medications, has untreated, active tuberculosis, is infected with human T-cell lymphotropic virus type I or type II, is using or is dependent upon an illicit drug, is taking prescribed cancer chemotherapy agents, such as antimetabolites that interfere with DNA replication and cell division, or is undergoing radiation therapies (CDC, 2013).

Although the options are typically seen as breast or bottle, sometimes there are alternative options. These options include donor milk, tandem nursing, and wet nursing. Milk banks are becoming popular in North America. There are different types of milk banks. Some are regulated and provide donated, pasteurized milk for free to babies in need. Others are for-profit milk centers where parents can buy breast milk to bottle feed to their infants.

Potential for Further Study

Understanding the feeding choices available to individuals with marginalized identities is a complex and under researched topic. Further research is needed in many areas of the social and cultural aspects of infant feeding. This is particularly true of parents with transgender identity and how infant feeding affects their gender identity as a parent. If gender were not socially

constructed as a binary, would infant feeding be such a salient part of gender identity? This is an area for potential further research.

Another area for increased research potential is the aspect of meaningfully supporting mothers to make good infant feeding choices. The current literature suggests that most so-called “supports’ are really pressures forcing mothers to choose the feeding method their station in life most aligns with. Research is needed on illuminating ways that actually support new mothers to make the right choice(s) for their family at that particular time, and how changes in society and culture can facilitate that decision.

Chapter 3: Methodology

Formulation

This study was an investigation in to what factors influence new mothers' feeding choices for infants under the age of two years old. The purpose of this research was to uncover the most effective means of supporting mothers to make feeding choices that best fit the needs of their individual families. This mixed method study primarily generated quantitative data with an opportunity for the participants to also give a detailed qualitative response. This was conducted via online survey in December of 2013.

A mixed method methodology was chosen with the purpose of getting a clear picture of what factors may and may not influence new mothers when the mothers are choosing between primarily breastfeeding or bottle feeding their babies. The Likert scale used to collect quantitative data listed influential factors the researcher found within the scope of infant feeding literature. The mothers were asked to rank these known factors by how influential each factor was to her personally.

The open ended question collected qualitative data. This gave the mothers the opportunity to state any factors they found to be influential that were not listed on the Likert scale they had just answered. This also served as an opportunity for some of the women to describe why they made the choices they made based on their circumstances at the time of each of their childbirths. For example, several mothers stated that as their circumstances changed, the factors they were influenced by changed as well. This data would not have been collected without the opportunity for an open ended response as the survey does not otherwise allow for

mothers to express their individual circumstances beyond age, age at first childbirth, number of children, and partnership status.

According to Engel & Schutt (2013), survey research is the “most popular form of social research because of their versatility, efficiency, and generalizability’ (Engel & Schutt, 2013). This research was aimed at securing a large sample to maximize generalizability of the data. The theoretical framework for the design of this survey was based on a mixed mode method for reaching a wide participatory sample. Mixed mode surveys can maximize data collected from a diverse sample of people based on its far reaching capacity. The open ended question was formed based on grounded theory. The data was coded line by line and analyzed for content as the themes within the data revealed themselves.

Sample

Upon receiving HSR approval (Appendix A), this study was available via the internet. The sample was recruited through social media, Facebook, including several mothers’ support group pages, and was sent via email to social service agencies that serve mothers in Massachusetts. This sample rapidly snowballed from mother to mother, with many women sharing it with their friends and families.

The total number of responses was 1,017 with over 800 meeting sample qualifications and answering all questions. The sample consisted of women aged 18-45 with an average age of 32. The average age of first childbirth was 28. 97.58% of the sample identify as partnered. Data was not collected for socioeconomic status, religion, or sexual orientation. Excluded from the study were women who had not given birth in the last five years and males.

There were some notable limitations to the sample technique. Firstly, the sample was shared with many individuals in the researcher's personal network which includes a large percentage of social workers, registered nurses, and individuals interested in attachment parenting. Within this population there has been expressed a large interest in breastfeeding. It is possible that due to the high motivation to breastfeed, some of the factors may be over or under reported as influential. Had the balance between breast feeding mother and bottle feeding mothers been more equitable this may have been avoided. Additionally, the survey was distributed with agencies that advocate for and support parents, such as WIC, Berkshire Children and Families and local family centers. Mothers with access and connections to these agencies are by definition linked to some type of support network. Mothers without a link to such support or without access to a computer and the internet may have a different experience than the mothers sampled. This outreach would be a potential area for further study. However, with said limitations, the sample size was extremely large and shared around the country and therefore reliability and validity seem sufficient.

Data Collection

Interested participants had access to the online survey in December 2013. This survey was mixed-methods and created by the researcher via SurveyMonkey. The survey assured confidentiality as it was anonymous and had no means of collecting identifying information from participants (Appendix C). Participants had the opportunity to exit the survey at any time and to choose not to answer any individual question(s) while continuing to participate. A list of resources was provided in the event of emotional distress caused by participation (Appendix C).

The survey consisted of several sections. The first section consisted of a consent to participate form with detailed information about the purpose of the survey. This question was mandatory and the participant had the option of agreeing and continuing on to the survey or refusing and exiting the survey. The next question determined eligibility by asking if the participant was a new mother within the last five years. The next questions gathered information about age, age at first child birth, and number of children. The participant was then asked to self identify their primary feeding choice for their infant between breast feeding and bottle feeding. The participant then began a 20 question series Likert scale portion of the survey, ranking various influential factors by how influential the factor was to them.

The final question was an open ended question asking if there were any other factors either influencing the mother or the lack of having a factor influencing them in making their feeding choice. The open ended question was answered by 482 of the 1017 participants.

The participant was then thanked for her participation and given a list of national parenting hotline numbers in the case of emotional distress (Appendix C). This was due to the sensitive nature of discussing one's choices for feeding their infant. Some individuals reported feeling triggered by this question and reported experiencing feeling guilt or pressure regarding their choice. In these cases, the hope would be the participant would utilize these hotlines.

Data Analysis

The quantitative data was analyzed for frequency of responses by the Smith College School for Social Work statistician, Marjorie Postal. The demographic information was analyzed by frequency giving a picture of the average participant's age, age at first childbirth, number of

children, and partnership status. Each of the 20 influential factors given were analyzed by frequency of given answer with the choices of not applicable, not at all influential, not very influential, somewhat influential, influential, very influential, and the most influential factor in my decision.

Once the primary responses were analyzed for frequency, the data was analyzed with age and influence of factors and age of first child birth and influential factors. The purpose of this breakdown was to determine if age has an impact on what mothers find influential and also if age at first child birth had any impact on what mother's find influential. The Smith College staff statistician ran Spearman correlations, analyzing the association between age and the responses to the factors.

The data was then broken down into sub categories of responses from participants based on feeding choice. This gave a picture as to the influence of the listed factors based on the feeding choice the mother then made, breast or bottle. Many factors were found to be significantly more or less influential based on feeding choice beyond the overall response.

Just less than half of the respondents (N=482) answered the final, open-ended question. The researcher used content analysis to open code and analyze and categorize the data gained from the open ended question. Similar or identical answers and portions of answers were categorized together. The categories of answers were coded and the frequencies determined.

After the survey was designed, it was available via survey monkey for several days. The survey quickly became viral and got 1017 responses in three days. This involvement was far greater than expected. The next chapter details the findings of this survey.

Chapter 4: Findings

The survey was available via SurveyMonkey in early December 2013. Originally, the survey was answered by 1017 participants (N=1017). One individual said no to consent and 23 said no to the one screening question asking if the participant was a new mother who had given birth within the past five years, reducing the number of participants going on to the survey to N=993. Nineteen participants left the screening question blank and seven of these 19 continued on with the study. Five of these seven met the criteria for participation, based on their age and age at childbirth with a difference of less than 5 years. The statistician deleted the other two who skipped the screening question. Lastly, 152 participants stopped answering questions after the screening question, resulting in N=827. The following findings are based on N=827. However, because all of the questions were optional after the informed consent question, not all frequencies will add up to a total of N=827.

Demographics

Several questions were asked to gain an understanding of who were the women who answered the survey. These questions collected data about the women's age, age at first childbirth, number of children, and partnership status. This information presented a picture of the average respondent and also allowed the researcher to analyze responses based on individual circumstances. The women who answered the survey ranged in age from 20-45 years old. The mean average current age was 32.29 years old, and median current age was 33 years old (Table 1). The participants' age at first childbirth ranged from 16-42 years old. The mean average age at first childbirth was 28.2 years old, and median age at first child birth was 29 years old (Table 2).

Table 1: Percent of current age

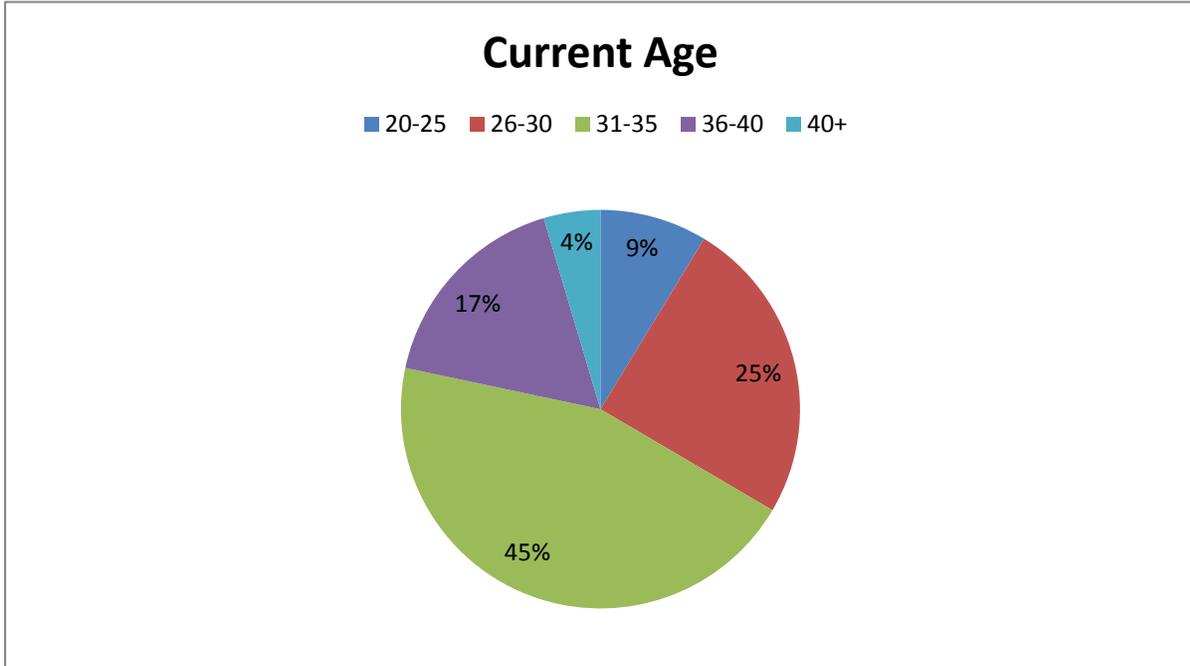
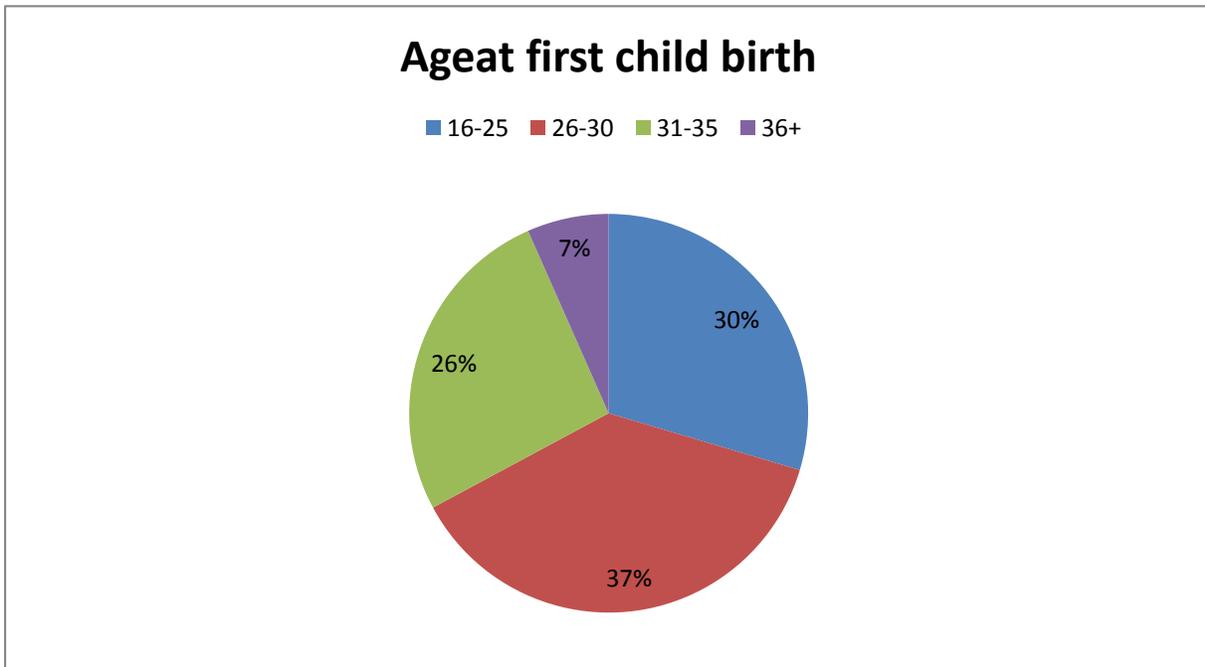


Table 2: Age at first childbirth



Number of children was an important question to ask as some of the influential factors on the scale asked about the needs of other children in the home. Six participants chose not to answer the question asking about number of children. Of the 821 individuals who did answer this question, 42.3% stated they have one child or have one child and are currently pregnant. 39.4% of the respondents (N=327) stated that they either have two children or that they have two children and are currently pregnant. 17.2% (N=143) stated they had more than three children.

The majority of the women reported being in a partnership (97.58%, N=805). An additional 2.3% stated they were not in a partnership (N=19). The remaining 0.73% (N=6) stated they were in the category “other” and wrote in responses. Some of these responses were “divorced,” “separated,” and “active parent non partner relationship.”

Frequencies of basic question: how influential was each given factor to your feeding choice

The survey listed 20 factors and asked participants to rank the factors in terms of influence on a scale of not at all influential to the most influential factor in my choice. These factors were then analyzed for influence among participants. The top five and bottom five factors were determined by analyzing the responses that participants rated as influential, very influential, and the most influential versus those participants rated as not very influential, not at all influential, and not applicable.

Most Influential

The most influential factor in making a feeding choice appears to be health. Between the health of the mother and the health of the baby, this was an extremely influential category. The

factor rated the single most influential factor in participant's choice by the most people was the health benefits for the baby (64.2% N=531). Participants ranking health of the baby either influential, very influential or the most influential factor resulted in 93% of the participants (N=772). Health benefits for the mother were somewhat less influential, yet still significant with 75.8% of respondents ranking this as influential, very influential, or the most influential factor (N=595). Interestingly, 3.7% of respondents ranked the health of the baby as not applicable or not at all influential (N=30). This is in sharp contrast to the 93% of participants who do find the health of the baby to be an influential factor.

Top 5 overall

The factors that appear to most influence mothers are the mother's personal beliefs, the health of the baby, mother baby bonding, the health of the mother and the presence of positive partner support.

Table 3: The most influential factors

Factors	Percentage	Number
Health of baby	93%	772
Personal beliefs	87.9%	728
Mother-baby bonding	86.6%	716
Health of mother	75.8%	595
Partner support	69.4%	575

Bottom 5 overall

The factors that appear to least influence the mothers are lack of birthing education, lack of peer support, lack of partner support, the need to return to school or work, and the marketing of formula. All of the “lack of” factors included the following clarification: “As in: if had this been available to me, I would have made another feeding choice.” In the bottom five factors are all of the lack of questions on the survey.

Table 4: Least Influential Factors

Factors	Percentage	Numbers
Lack of birthing education	89	736
Lack of peer support	88.4	731
Lack of partner support	87.8	726
Marketing of formula	87.8	726
Return to work/ school	70.1	570

In the bottom overall five factors are all of the “lack of” questions on the survey. Looking only at factors that were in themselves not influential (as in it was the factor itself that was influential and not the lack of a factor being measured) the least influential factors were the need to return to school or work, the marketing of formula, media messages, culture, and the bonding of the baby with the non-lactating parent. The factor that was heavily scaled as “not applicable” was other children in the family’s needs (39.1%, N=323). This factor was not included in the least influential factors list due to the high number of participants reporting having only one child (42.3%, N=351).

Table 5: Bottom 5 concrete factors

Factor	Percentage	Number
Marketing of formula	87.8	726
Return to work/ school	70.1	570
Media Messages	69.9	578
Culture	55.8	461
Bonding w/ other parent	53.8	445

Data spread across influence scale

Many of the factors produced an influence report that was spread greatly across the scale. These factors included peer support, newborn education, and natural parenting as a concept. The frequencies of how influential each of these were varied by less than 10% from least influential to most influential and most of the options in between. It would appear that the participants were possibly very scattered on their opinions of these factors and that none of these factors was overwhelmingly influential nor particularly uninfluential.

Cross Analysis: Frequencies of influence of factor and age

The following were significantly negatively correlated with maternal age in that as mother's age went up the influence of these factors went down. The younger mothers were more influenced by these factors than were the older mothers. These factors were health benefits for the mother, health benefits for the baby, concept of natural parenting, bonding, and newborn sleep needs. The other factors listed were not significantly impacted by the mother's age.

The following factors were significantly negatively correlated with the mother's age at first childbirth. The mothers who gave birth younger were significantly more influenced by these factors than were the mothers whose first childbirth occurred at a later age. These factors were health of the mother, concept of natural parenting, convenience, sleep needs of both mother and baby, and lack of peer support. Younger mothers found the concept of natural parenting, health, and newborn sleep more influential in both groups, the women who are currently younger and also the women who gave birth for the first time at a younger age.

Women who waited to have their first child until they were somewhat older than the first group were more influenced by the need to return to school or work than were younger women. This was the only factor that was significantly more influential for older first-time mothers than for younger mothers.

Cross analysis: Bottle-feeding and influence

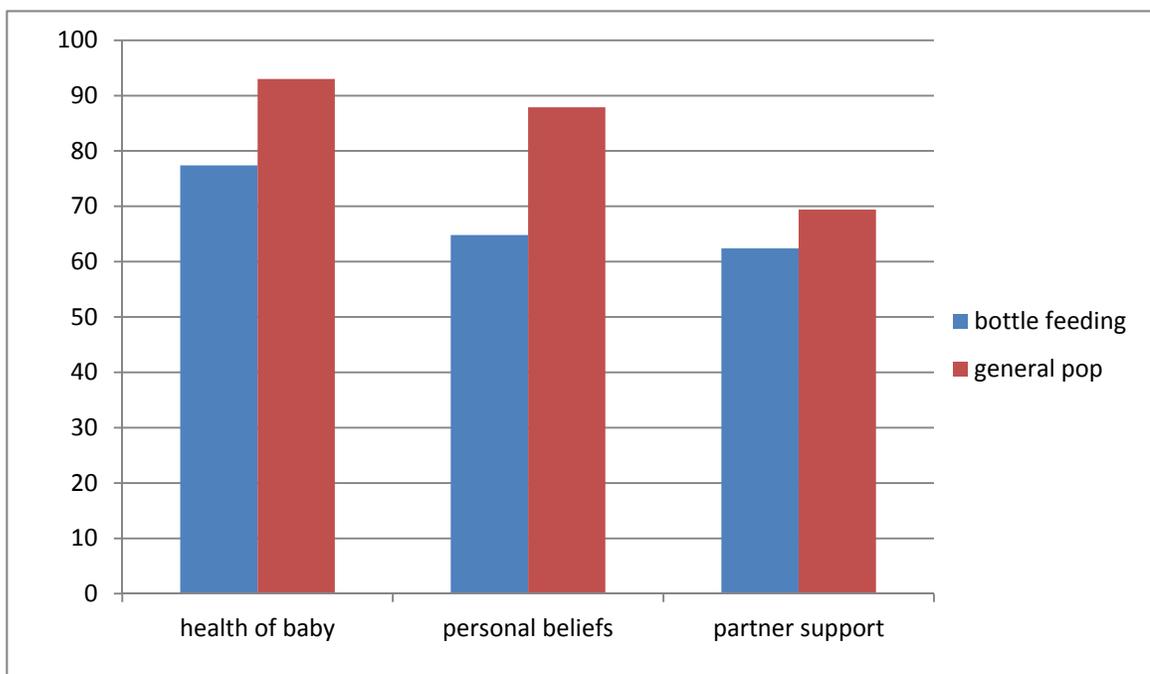
In the group of participants who self identified as primarily bottle feeding their babies, the mean average age was 33.39 years old and median average age of 34 years old, just slightly higher than the overall sample averages. Mean average age at first childbirth was 29 years old and median of 30 years old, also slightly older than the average age at first childbirth of the entire sample population of the study. This group consisted of a sample of 125 participants (N125).

The bottle feeding group was more likely than the general population to find the factors listed as less influential. There were only six of the factors listed that achieved over half of the respondents categorizing the factor as influential to most influential. Of these, three were widely

spread from not at all influential to the most influential and the other three were significantly influential, with over 60% categorizing them as influential to most influential.

The three factors that were reported to be significantly influential were health benefits for the baby (77.4% (n=95)) categorized as influential to most influential), personal beliefs (64.8 (n=81)), and positive partner support (62.4% (n=78)). This is similar to the top three in the general population, however all highly influential factors drop off after these three.

Table 6: Most influential factors of bottle feeding respondents compared to general population respondents



Similarly to the general population, the “lack of/ had this been available I would have made another choice” questions were reported to be extremely not influential. In fact, the factor “lack of birthing education” among the bottle feeding respondents was reported to be the least

influential factor for both the group and the general population with 89.6% of bottle feeding respondents and 89% of the general population categorizing it as not influential. It was also the most frequently skipped question with a total of 8 individuals (two bottle-feeding individuals) skipping it altogether. Excluding the “lack of” questions, the least influential factors, with over 75% of respondents categorizing these as not influential, were cultural beliefs, media messages, and the marketing of formula.

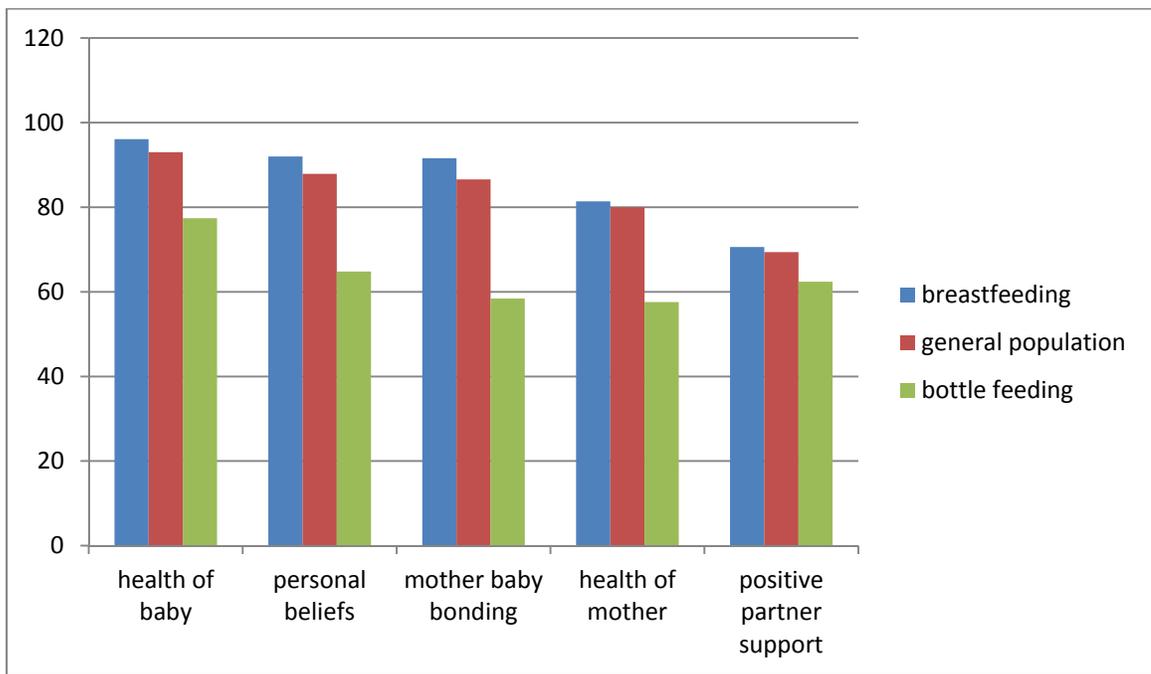
Cross analysis: Breastfeeding and influence

In the group of participants who self identified as primarily breastfeeding their babies, the mean and median average age was 32 years old, just slightly lower than the overall sample averages. Mean and median average age at first childbirth was 28 years old, also slightly lower than the average age at first childbirth of the entire sample population of the study. This group consisted of a sample of 702 participants (N=702).

The top five influential factors in the breastfeeding sample were health benefits for the baby (96.1% of breastfeeding respondents categorized this as influential to most influential), personal beliefs (92% (n=646)), mother baby bonding (91.6% (n=643)), health benefits for the mother (81.4% (n=572)), and partner support (70.6% (n=496)). These were also the top five in the general population; however the percentage that found each factor to be influential was greatly higher in the breastfeeding population. Still greater was the difference in percentage between the breastfeeding group and the bottle feeding group in their reporting of the top five influential factors (see Table 7).

The least influential factors in the breastfeeding group were similar to the least influential factors overall, including all of the “lack of/had this been available I would have made another choice” questions, media messages, and the marketing of formula. Other children’s needs were also vastly reported as not applicable, as the majority of the respondents reported having only one child.

Table 7: Top five factors by percentage across breast, bottle, and general population



Cross analysis: Breastfeeding vs. Bottle-feeding and influence

Some of the factors listed were reported as widely differently influential between the two groups. For instance, the health benefits for the mother were reported as the fourth most influential factor for breastfeeding mothers (81.4% (n=572)), yet bottle feeding mothers ranked the health benefits for the mother as not influential (57.6%, (n=72)). Also for example, the concept of natural parenting was reported as influential by breastfeeding respondents (69.2%

(n=486)), but was categorized as not influential by the majority of bottle feeding participants (52% (n=72)). Interestingly, the concept of nonlactating parental bonding was rated as not at all influential for breastfeeding mothers (56.3% (n=395)) and was completely spread across the scale for bottle feeding mothers with an equal portion rating both influential and not influential. Convenience, sleep needs for the baby, and newborn education were similarly found to be significantly influential for breastfeeding mothers and neither influential nor not influential for bottle feeding mothers.

Qualitative Data

The final question on the survey was an open response question that stated “what factors influenced your primary feeding choice and are not listed here?” This question was answered by 345 participants (41.7% of all respondents (n=345)). The primary answers given were cost, ease, and breastfeeding is natural. Many stated in the open ended question that they needed to return to school or work and gave a bottle for that reason, however in the factors listed, the need to return to school or work was categorized as not influential by 59.2% of bottle feeding mothers and 72.1% of breastfeeding mothers. A medical issue, both further specified and not otherwise specified, preventing mothers from being able to breastfeed was also an often cited factor in the open ended response.

Many bottle feeding mothers reported that their babies were “tongue tied” (medically known as ankyloglossia) and therefore had to take a bottle. Some of these mothers expressed that had their babies not been tongue tied, they would have breastfed or that they initially tried to breastfeed but could not due to the tongue tie issue.

Of the 125 individuals who self identified as bottle feeders, 99 answered the open ended question, a percentage far greater than the breast feeding group. The most commonly given answer within the bottle feeding group to the open ended question was low milk supply with 37 individuals citing low supply as a reason they bottle fed. The second most common answer given was latch issues with 20 individuals mentioning issues getting the baby to latch lead them to bottle feed. Interestingly, in the top two answers given, it would appear that individuals wanted to breastfeed and latch or supply issues lead them to bottle feed as opposed to their first choice being bottle feeding. The third most common answer cited was mothers of preemies and/or multiples. 15 respondents cited their twin and/or preemie delivery complicated their ability to breastfeed as their primary reason for bottle-feeding. In only nine respondents, a clear preference for bottle feeding over breastfeeding was expressly reported and, within those nine respondents, eight also included some type of breastfeeding disclaimer such as “breastfeeding was never a thought of mine, never wanted to try it.” Other answers included availability of free formula (n=1), partner’s involvement (n=3), mother’s experience of pain (n=5), and mother’s physical and mental health issues n=11).

The final chapter of will examine the potential meaning of this data. It will be analyzed against the current literature of breast and bottle feeding to determine why and how mothers are influenced by these factors. The intention of this analysis is to determine the best possible methods of supporting new mothers in their feeding choices and to empower mothers to make their choices in an educated manner free of judgment.

Chapter 5: Discussion

The previous chapters of this study have addressed what the literature suggests about making feeding choices for babies under the age of two and what women who answered the online survey state are their reasons for making feeding choices. The literature and the findings together suggest that mothers are motivated by many factors that they see as best for their babies, such as health, bonding, and cost. However, mothers are also struggling with acceptance and shame both from other mothers and from society in general. The final chapter discusses the limitations of the study and state potential for further study. It will analyze and detail the meaning of the findings. This chapter will also compare the findings of the survey with those from the literature. Finally it will examine and suggest the possible social policy implications for the study findings.

Limitations to the Study

As the intention of the survey was to question mothers who had the option to breast feed or to bottle feed, the study was worded in such a way that it inadvertently excluded some mothers. The study was limited to only mothers who had given birth within the past five years, however this excluded some mothers who did have both opportunity to breast and to bottle feed but did not strictly fall under survey criteria as a potential participant; for example same sex partnerships where one mother birthed the child and the other mother fed the child. This also excluded adoptive parents, however it has since come to the researcher's attention that in some cases adoptive parents who have not given birth within the last five years and therefore do not technically fall under the criteria are nonetheless capable of lactating and breastfeeding their

children. One participant remarked that she gave birth to the child and her wife who is male to female transgender breastfed the child. These family scenarios were not expressly included in the study criteria, making some feel they did not fit the criteria to participate, although their responses are a welcome and important part of the study. The wording of the participant criteria statement therefore was a limitation of the study in this manner.

A second limitation of the study was the interchangeable use of the words baby, child, and newborn. Some participants found this to be confusing and were unsure how to answer as such. As the question was directed at the feeding of individuals under the age of two years old the correct terminology used should have strictly been “baby” to avoid this confusion. This was an oversight on the part of the researcher.

Another limitation of the study was the lack of space to detail the experience of parents who combination fed or whose experience did not neatly fit into either category breast or bottle. Skin to skin bottle feeding, breast milk given from bottles and in the case of ill children gavage tubes, tandem nursing, and donor milk were not given as choices leaving participants unsure which box to check. Some parents expressed that they had more than one child in the past five years and were unsure which child to answer the questions for. This could have been made clearer for participants.

Potential for Further Study

Many mothers wrote in to the open ended question stating that they had intended to breastfeed but they bottle fed. This study gives a small glimpse of that experience. A follow up

study with questions specifically regarding infant feeding intention versus infant feeding duration would be of note to this discussion.

Key Findings

Mothers were overwhelmingly influenced by health for the baby and for themselves, bonding with their babies, and necessity. There seemed to be very little variation between which factors were found to be the most and the least influential between the groups, breastfeeding mothers, bottle feeding mothers, and the general population of the sample. However, the factors that ranked in the middle of influential to not influential varied greatly both within and among the groups. All of the mothers were highly influenced by the health of the baby and it was ranked the most influential factor within all three groups and across the age span of the participants, both current age and age at first childbirth.

The mothers were also highly influenced by personal beliefs, which is better understood when analyzing the qualitative data where mothers were given the opportunity to write in what that meant for them. Breastfeeding mothers wrote about their beliefs of breastfeeding as a philosophy of parenting and often cited the well-known slogan “breast is best.” Bottle feeding mothers too were influenced by their personal beliefs and wrote about a mother’s right to choose what works for her family.

Breastfeeding mothers appeared to find the listed factors more influential in general than did the bottle feeding mothers. Although most factors ranked as influential were similar in both groups, in the breastfeeding group the percentages of influence were significantly higher. For example, while both groups found health of the baby to be the most influential factor, 96.1% of

breastfeeding mothers ranked baby's health the most influential factor, only 77.4% of bottle feeding mothers ranked this factor as such. For both groups this was ranked as the most influential factor yet the difference between the breast and bottle groups was almost 20%. This may speak to the survey's accessibility to bottle feeding mothers in terms of its ability to represent their experience, as suggested by their higher tendency to use the write in answer.

Certain factors were ranked as greatly differently influential between the breastfeeding respondents and the bottle feeding respondents. These were the health of the mother, and the concept of natural parenting. The benefits of breast feeding on the mother's health is widely reported so it is no surprise that breastfeeding mothers state that their health was an influential factor. However, bottle feeding mothers state that their own health was not particularly influential to them. Interestingly, in the open ended question, many bottle feeding mothers wrote in that they tried to breastfeed but were unable to due to health issues. It seems reasonable to surmise that these women were in fact influenced by their health but felt that because the influence was negative as opposed to positive that they should rank the factor as not influential.

The write in question was answered by 482 participants. Of those 99 were bottle feeding mothers (79.2% of all bottle feeding mothers) and 383 were breastfeeding mothers (54% of breastfeeding mothers). Perhaps the factors listed did not speak to the experience of bottle feeding mothers as closely as to the breast feeding mothers.

The bottle feeding mothers wrote most about their inability to breastfeed leading them to bottle feed. It seems that many of the mothers who answered the survey from a bottle feeding perspective were initially intending to breast feed and other issues lead them to bottle feed. These

issues included latch issues from the baby, lack of milk supply, prematurity and multiple birth causing breastfeeding to be especially difficult or complicated and physical and mental health complications for the mother. Several of the bottle feeding mothers indicated a strong desire to breastfeed that was interrupted by their personal circumstances. Very few (8.8% (N=8)) bottle feeding mothers indicated a planned or intended bottle feeding experience or a clear bottle feeding preference. It seems many women would benefit from additional empowering feeding support during pregnancy throughout the first years of their children's lives.

A significantly smaller percentage, just over half, of the breastfeeding mothers wrote in a response to the open ended question. Breastfeeding mothers most often cited the cost benefit of not buying expensive formula, bottles, pumps, and other feeding supplies. They also cited female family members and friends mentoring them to help increase milk supply and teach proper nursing techniques and a natural instinct to breastfeed. As one mother wrote: "My mother breastfed all of us. It did not occur to me to do anything other than breastfeed... I would have breastfed even if it was expensive and cost me sleep."

An interesting common theme in breastfeeding mothers' responses was a general distrust or fear of formula companies and some made mention of formula being chemical ridden and poison. The listed factor "how influential was the marketing of formula" being ranked as one of the lowest influential factors in both groups may have given some indication that the participants were not influenced by the formula itself. The write in answers gave a new depth to this lack of influence of the availability of a widely marketed potential breast milk substitute. "We have raised all of our kids with an Absolutely. No. Formula. Rule." one mother stated. Similarly a mother wrote in simply "chemicals in formula make me cringe." Another mom expressed this

sentiment about their strict anti-formula position “formula is full of chemicals that will cause cancer later in life.”

Findings and the Literature

Consistent with the literature (Haxton, 2012), breastfeeding mothers were highly motivated by the potential for bonding with their babies. The skin to skin contact inherent in breastfeeding promotes mother baby bonding (International Breastfeeding Centre, 2009). Mothers from both groups stated that bonding was one of the top five influential factors (86.6% of all respondents) and particularly breastfeeding mothers ranked bonding as especially influential (91.6%). Additionally, mothers used the open ended question to speak to their experience of bonding and breastfeeding. One mother stated, “The reason that I chose to exclusively breastfeed skin to skin was bonding.” Another mom wrote in “I loved the bond it created between us.”

Converse to the literature, convenience was ranked as a lower influential factor for bottle feeding mothers. Previous studies (Williams, et al, 2013; Sloan, 2006) state that bottle feeding mothers were motivated by convenience and a need to return to work or school. However in this study, with 125 bottle feeding participants, both convenience and the need to return to school or work were ranked relatively low on the scale of influential factors. Much more influential to bottle feeding mothers, separate from breastfeeding mothers, was the prevalence of a low milk supply and inability of the baby to latch on to the breast.

The literature clearly states that the health of the baby is in the spotlight when it comes to making infant feeding choices (WHO, 2001; AAFP, 2013; CDC, 2013). This was also reflected

in the responses to the survey with the health of the baby being by far the most reported influential factor in making a feeding choice (93%). However, most women already know that breastfeeding is the healthiest choice they can make for their babies and yet sometimes it is not feasible or desirable to do so. If the health of the baby is the single most influential factor in making feeding choices, how can medical and social agencies empower and support new mothers to make decisions based on health? As one bottle feeding mother stated:

I tried to breastfeed for as long as I could take it, but after returning to work pumping wasn't working so I had to stop. I felt the media made me feel like a terrible person when I had to stop.

Another mother states similarly "I felt the lactation consultant was pushy and not willing to support. I left there crying and bought formula on my way home." A third reported "I was not able to breastfeed due to milk not coming in. I felt horrible like I was letting my husband and daughter down." These women do not sound as though they felt empowered to choose one type of feeding over the other, instead they sound as though they felt disempowered and shamed for making their choice.

Many bottle mothers wrote in about lack of professional feeding support (lactation consultants, nurses, doctors, and others) or the presence of professional support that was not empowering. Conversely, many breastfeeding mothers wrote in about their wonderful experiences with professionals. One mother wrote:

At the birth of my first child I didn't have the education and support for breastfeeding and formula was pushed by hospital and doctor office samples

given all the time. With the second child I was determined to educate myself and to breastfeed. Samples do not educate people. If I had this education with my first child I know I could have been successful.

Another mother wrote in “My baby wouldn’t latch; with the help of the lactation consultant ... got her to latch. Without that support it would have been easy to become discouraged and switch to formula.” As suggested by numerous studies, (Belay, 2013; Hoag Dann, 2005) proper and supportive lactation support can ease the burden of latching and supply issues which commonly cause dissonance between breastfeeding intention and breastfeeding duration, as exhibited by these mothers’ comments.

Implications for Policy

Perhaps the answer lies in the medical and lactation consulting staff for helping to empower moms to make a choice based on the health of the baby that they can feel good about. Studies have shown (Hoag, 2005) that knowledgeable and professional medical staff and lactation support increases breastfeeding rates. For many of the women who answered the survey, this was not the case. “I did not appreciate being bullied by peers or nurses about breastfeeding.”

Lactation consultants and nurses were kind enough but didn’t really dig in to the problem. At 13 wks pp I needed emergency surgery bc the 2nd placenta was beginning to bleed out... breastfeeding saved my life but I couldn’t continue having three children, zero medical support. I know the benefits. Didn’t matter to the insurance company.

Educating mothers on the health benefits of breast milk versus formula might not be the most important step in helping mothers make this choice. Mothers on both sides of the debate are aware of the health benefits. It seems as though the real need for change is on a policy level.

Implementing policies in the workplace that support new mothers is a possible solution. Studies suggest that overarching lactation support in the workplace, including not only time and space provided but also free services of lactation professionals and infant feeding classes, yield a 94% return-to-work rate after maternity leave and a breastfeeding duration average of 6.3 months and a 98% breastfeeding success rate (Ortiz, 2004). This policy supports working mothers and appears to empower them to balance work and family. Which is a struggle often cited in the responses of the mothers.

Countries with higher breastfeeding rates such as Norway, Finland and Sweden also report higher maternal satisfaction and boast social policies that support mothers instead of bullying or shaming them. Norway for example has unusually high breastfeeding rates (Anderson, 2012). Norway has policies in place that allow for pro-family quality of life that we do not enjoy in the United States such as subsidized daycare, public healthcare, paid paternal leave, and a low infant mortality rate (Subramanian, 2013).

Norway is ranked as the third best country in the world to be a mother, after Finland and Sweden (Subramanian, 2013). Norwegian support of children begins in the womb with free maternal healthcare, paid parental leave of 46 weeks or 56 weeks at 80 per cent pay (Anderson, 2012). Norwegian children are also automatically entitled to subsidized public childcare when they are one year old (Subramanian, 2013). The childcare is not only subsidized but it is also

high quality with rigorous standards of care in place for centers (Anderson, 2012). Additionally, work places in Norway are much more accepting of parents' needs and often children are present in the parent's work environment. None of these family friendly policies exist in the United States leaving parents often times struggling to afford quality childcare, healthcare, and to balance work and family life.

Mothers are already influenced to do what is best for their babies and for their families. The question now is how to empower them to do so. Pro family policy supports may be the answer.

References

- Air Force instructions (AFI). (2012). Breastfeeding and pumping. AFI44-102 4.16
- American Academy of Family Physicians (2013). Breastfeeding (policy statement).
<http://www.aafp.org/about/policies/all/breastfeeding.html>.
- Anderson, A. (2012). Norway shows the way in childcare. *Irish Times*.
<http://www.childcarecanada.org/documents/child-care-news/12/02/norway-shows-way-childcare>
- Babyfriendly USA. (2012). The ten steps to successful breastfeeding.
<http://www.babyfriendlyusa.org/about-us/baby-friendly-hospital-initiative/the-ten-steps>
- Balash, M. Panel, M., & Sutton, E. (2013). Raising kids on a shoestring: infant feeding. *Feminists for life*. <http://www.feministsforlife.org/rkoas/rkoas-infant-feeding/>
- Belay, B., Allen, J., Williams, N., Dooyema, C., & Foltz, J. (2013). Promoting women's health in hospitals: A focus on breastfeeding and lactation support for employees and patients. *Journal Of Women's Health (15409996)*, 22(1), 1-4. doi:10.1089/jwh.2012.4040
- Britton, J., Britton, H., & Gronwaldt, V. (2006). Breastfeeding, sensitivity, and attachment. *Pediatrics*, 118(5), e1436-e1443.
- Carroll, L. (2012). 1 in 8 low income parents waters down formula. *NBC News*.
<http://www.nbcnews.com/health/1-8-low-income-parents-waters-down-formula-study-finds-1C6436516>
- Centers for Disease Control (CDC). (2013). Breastfeeding and diseases.
<http://www.cdc.gov/breastfeeding/disease/>
- Cookin, A, Rowe, H. J., & Fisher, J. R. W. (2012). Paid parental leave supports breastfeeding and mother infant relationship: A prospective investigation of maternal postpartum employment. *Australian and New Zealand Journal of public health*.36(3).
- Engel, R.J., & Schutt, R.K. (2013). *The practice of research in social work*. 3rd. Thousand Oaks, California: Sage Publications.
- Fairyington, S. (2012). It's time for feminists to stop arguing about breastfeeding and fight for better formula. *The New York Observer*. <http://observer.com/2012/09/time-for-feminists-to-stop-arguing-about-breastfeeding-and-fight-for-better-formula/>

- Feliciano, S. (2011). Understanding infant feeding choices among Hmong-American women in Saint Paul, MN. <http://udini.proquest.com/view/understanding-infant-feeding-pqid:2274246181/>
- Freeman, R., & Stevens, A. (2008). Nursing caries and buying time: An emerging theory of prolonged bottle feeding. *Community Dentistry And Oral Epidemiology*, 36(5), 425-433. doi:10.1111/j.1600-0528.2008.00425.x
- Gartner, L. M., Morton, J., Lawrence, R. A., et al. (2005). Breastfeeding: Breastfeeding and the use of human milk. *Pediatrics*. 115(2):496–506
<http://www.ncbi.nlm.nih.gov/pubmed/15687461>
- Grufferman, H. (2012). Women, work and babies. Will the mommy wars never end? http://www.huffingtonpost.com/barbara-hannah-grufferman/mommy-wars_b_1584446.html
- Harley, K., Stamm, N. L., & Eskenazi, B. (2007). The effect of time in the U.S. on the duration of breastfeeding in women of Mexican descent. *Maternal & Child Health Journal*, 11(2), 119-125. doi:10.1007/s10995-006-0152-5
- Haxton, D., Doering, J., Gingras, L., & Kelly, L. (2012). Implementing skin-to-skin contact at birth using the Iowa model. *Nursing For Women's Health*, 16(3), 220. doi:10.1111/j.1751-486X.2012.01733.x
- Hoag Dann, M. (2005). The lactation consultant: Problem solving, teaching, and support for the breastfeeding family. *Journal of Pediatric Health Care*, 19, 12-16
- Human Milk Bank Association of North America (hmbana). (2013). Milk banking. <http://hmbana.org>
- International Breastfeeding Centre. (2009). *The importance of skin to skin contact*. http://www.nbc.ca/index.php?option=com_content&id=82:the-importance-of-skin-to-skin-contact-&Itemid=17
- Kent G. (2006). WIC's promotion of infant formula in the United States. *International Breastfeeding Journal*.;1(1):8, Available at:
<http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=1481608&blobtype=pdf>.
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1481608/>
- Krogstrand, K. S. & Parr, K. (2005). Physicians ask for more problem-solving information to promote and support breastfeeding. *Journal of American Dietetic Association* 105:1943-1947
- Labbok, M. H., Smith, P. H. & Taylor, E. C. (2008). Breastfeeding and feminism: A focus on reproductive health, rights and justice. *International Breastfeeding Journal*. 3:8.

- Mayo Clinic. (2013). *Infant and toddler health: Infant formula*.
<http://www.mayoclinic.com/health/infant-formula/PR00058>
- Mayo Clinic. (2012). *Tongue tie definition. Diseases and conditions*.
<http://www.mayoclinic.org/diseases-conditions/tongue-tie/basics/definition/con-20035410>
- Mead Johnson & Company, LLC (2013). *About Enfamil*. www.enfamil.com
- National Resource Defense Council (NRDC). (2012). *The benefits of breastfeeding*.
<http://www.nrdc.org/breastmilk/benefits.asp>
- Ogbuanu C., Glover, S, Probst, J., Liu, H., & Hussey, J. (2011). The effect of maternity leave length and time of return to work on breastfeeding. *Pediatrics* 127(6).
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3387873>
- Ortiz, J., McGilligan, K., & Kelly, P. (2004). Duration of breast milk expression among working mothers enrolled in an employer-sponsored lactation program. *Pediatric Nursing*, 30(2), 111-119.
- Ricke, L., Baker, J., Madlon-Kay, D. J., & DeFor, T. (2005, Jan.). Newborn tongue tie, prevalence and effect of breastfeeding. *Journal of American Board of Family Medicine*. 18-1, 1-7. <http://www.jabfm.org/content/18/1/1.long>
- Rosenberg, K.D., Stull, J. D., Adler, M. R., Kashagen, L. J., & Crivelli-Kovach, (2008). Impact of hospital policies on breastfeeding outcomes. *Breastfeeding Medicine* 3,110-6.
- Segal, L., Stephenson, R., Dawes, M., & Feldman, P. (2007, June). Prevalence, diagnosis, and treatment of ankyloglossia. *Canadian Family Physician* 53(6),1027-1033.
<http://www.cfp.ca/content/53/6/1027.full>
- Stuebe, A. M., Rich-Edwards, J. W., Willett, W.C., et al. (2005). Duration of lactation and incidence of type 2 diabetes. *Journal of the American Medical Association* ;294:2601-2610.
- Subramanian, C. (2013). 10 best countries for moms. *Time*.
<http://newsfeed.time.com/2013/05/10/10-best-countries-for-moms/>
- United States Government Accountability Office (GAO). (2006). Breastfeeding: Some Strategies Used to Market Infant Formula May Discourage Breastfeeding; State Contracts Should Better Protect Against Misuse of WIC Name. *Report to Congressional Addresses*. GAO-06-282, <http://www.gao.gov/new.items/d06282.pdf>.

Williams, K., Donaghue, N., & Kurz, T. (2013). Giving guilt the flick? An investigation of mothers' talk about guilt in relation to infant feeding. *Psychology Of Women Quarterly*, 37(1), 97-112.

World Health Organization. (2001). The optimal duration of exclusive breastfeeding: Report of an expert consultation. *Nutrition*.
http://www.who.int/nutrition/publications/infantfeeding/WHO_NHD_01.09/en/index.html.

Appendix A: HSR Approval and Amendment Letters



School for Social Work
Smith College
Northampton, Massachusetts 01063
T (413) 585-7950 F (413) 585-7994

December 11, 2013

Jacqui Andrews

Dear Jacqui,

You did a very nice job on your revisions. Your project is now approved by the Human Subjects Review Committee.

Please note the following requirements:

Consent Forms: All subjects should be given a copy of the consent form.

Maintaining Data: You must retain all data and other documents for at least three (3) years past completion of the research activity.

In addition, these requirements may also be applicable:

Amendments: If you wish to change any aspect of the study (such as design, procedures, consent forms or subject population), please submit these changes to the Committee.

Renewal: You are required to apply for renewal of approval every year for as long as the study is active.

Completion: You are required to notify the Chair of the Human Subjects Review Committee when your study is completed (data collection finished). This requirement is met by completion of the thesis project during the Third Summer.

Congratulations and our best wishes on your interesting study.

Sincerely,

A handwritten signature in black ink, appearing to read 'Elaine Kersten'.

Elaine Kersten, Ed.D.
Co-Chair, Human Subjects Review Committee

CC: Fred Newdom, Research Advisor

RESEARCH PROJECT CHANGE OF PROTOCOL FORM – School for Social Work

You are presently the researcher on the following *approved* research project by the Human Subjects Committee (HSR) of Smith College School for Social Work:

What factors influence mothers when choosing between breastfeeding and bottle feeding as the primary feeding method of infants under the age of 2 years?

Jacqui Andrews
Fred Newdom

.....

I am requesting changes to the study protocols, as they were originally approved by the HSR Committee of Smith College School for Social Work. These changes are as follows:
Survey collection end date amendment from February 2014 to December 2013 due to rapid accumulation of responses.

[DESCRIBE ALL PROTOCOL CHANGES BEING PROPOSED IN NUMERIC SEQUENCE; BE BRIEF AND SPECIFIC]

.....

- I understand that these proposed changes in protocol will be reviewed by the Committee.
- I also understand that any proposed changes in protocol being requested in this form cannot be implemented until they have been fully approved by the HSR Committee.
- I have discussed these changes with my Research Advisor and he/she has approved them.

Your signature below indicates that you have read and understood the information provided above.

Signature of Researcher: _____Jacqui Andrews_____

Name of Researcher (PLEASE PRINT): _____Jacqui Andrews_____

Date: 13 Dec 2013

PLEASE RETURN THIS SIGNED & COMPLETED FORM TO Laura Wyman at LWyman@smith.edu or to Lilly Hall Room 115.

Moms who have given birth within 5 years

All new moms want what's best for their babies but how we make those decisions varies. I would like to invite you to participate in a short online survey regarding your personal infant feeding choices. By participating in this research and sharing information about your infant feeding choices you are helping to determine what supports help new moms in feeling empowered to make the best, most informed feeding choices for their newborns and their lives. Your responses could benefit women and infants by giving insight as to how professionals and agencies can effectively support mothers in making feeding choices for their babies aged 2 and under.



Link to survey: <https://www.surveymonkey.com/s/ZFYK6MP>

Jacquelyn Andrews, MSW Candidate 2014, Smith College School for Social Work

jandrews@smith.edu

Dear,

My name is Jacquelyn Andrews; I am a graduate student at the Smith College School for Social Work. Because of your agency's commitment to serving mothers and families, I am writing to ask for your help in completing my Master's thesis by promoting my brief (20 minute) electronic survey on factors that influence infant feeding choices of new mothers. By promoting this research to new mothers, you may help determine what factors aid new moms in feeling empowered to make the best, most informed feeding choices for their newborns. Their responses could give insight as to how professionals and agencies like you can effectively support and empower mothers feeding their babies aged 2 years and under.

Moms are eligible to participate in my study if they have given birth in the last five years regardless of where they gave birth or how they chose to feed their infants. Participation is anonymous, so I will have no way of knowing who participated. Please share this survey link with your clients by posting the link where new mothers can easily see the link, share the link with new mothers, and/ or allow new mothers access to computers to take this short survey.

Below is a link to the website containing my thesis questionnaire.

Please follow this link to the survey: <https://www.surveymonkey.com/s/ZFYK6MP>

If you have any questions about my research or the nature of participation, please feel free to reply to this email (jandrews@smith.edu).

Thank you for your time and interest in my research!

Jacquelyn Andrews
MSW Candidate 2014

Appendix D: Survey Tool

*** 1. Consent to Participate in a Research Study**
Smith College School for Social Work • Northampton, MA

.....

Title of Study: What factors influence mothers when choosing between breastfeeding and bottle feeding as the primary feeding method of infants under the age of 2 years?
Investigator(s): Jacquelyn Andrews, MSW candidate 2014, Smith College School for Social Work, 413-426-1793

.....

Introduction

- You are being asked to be in a research study of the effectiveness of support for newborn feeding choices for new mothers.
- You were selected as a possible participant because you are a new mother who has given birth in the past five years.
- We ask that you read this form and ask any questions that you may have before agreeing to be in the study.

Purpose of Study

- The purpose of the study is to determine what factors influence mothers in their infant feeding choices, both breast feeding and bottle feeding, and to determine how to best empower new mothers to make feeding choices that fit their families.
- This study is being conducted as a research requirement for my master's degree in social work from Smith College.
- Ultimately, this research may be published or presented at professional conferences.

Description of the Study Procedures

- If you agree to be in this study, you will be asked to do the following things: participate anonymously in a brief online survey about the choices you made when feeding your newborn child.

Risks/Discomforts of Being in this Study

- There are no reasonable foreseeable (or expected) risks.