

**THE IMPACT OF PARTNER/FAMILY INFLUENCES AND FAMILY  
BREASTFEEDING EXPOSURE ON BREASTFEEDING PRACTICES AMONG  
BLACK/AFRICAN AMERICAN WOMEN IN PITTSBURGH, ALLEGHENY COUNTY  
PA**

by

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COUNTY PA**

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**ABSTRACT**

Breastfeeding (BF) disparities between Black and White women is a public health concern. In the literature, it's unclear how family influences BF practices among Black women. This study's purpose was to describe how familial factors influences BF initiation and duration among Black women in Pittsburgh. Its aims were: 1) analyze if familial factors (partner and family support) play a role in BF. 2) investigate association between partner/family influences and personal exposure to BF with BF initiation and duration.

Analysis was based on data from the Pittsburgh Black Breastfeeding Research Study, an online survey on infant feeding practices among the Black population. Women that identify as Black, age 18 or older, with a child age two or younger, living in Pittsburgh were included. Recruitment was through posters and flyers distributed in health agencies, local birthing hospitals and social media (e.g Facebook). Outcome variables were BF initiation, (defined as mother that breastfed a child at least once) and duration, (defined as mother that breastfed for at least 6 months). Exposure variables were familial factors (partner encouragement, family influence) and exposure to BF (defined as mother breastfed as a child and/or had family members who breastfed)

Descriptive and univariate analysis were stratified by BF initiation and duration. Logistic regression examined relationship between: a) family/partner encouragement with BF initiation and duration b) personal exposure to BF with BF initiation and duration.

Results revealed no sample difference in socio-demographics between group with BF initiation and duration and group that did not BF. Statistically significant difference (p-value <0.05) was observed between BF initiation and education in which mothers that initiated BF had higher education levels than those that did not. No association were seen between familial factors, personal exposure to BF with BF initiation and BF duration. However, positives associations were found, yet not statistically significant. Odds Ratios revealed women that didn't perceived partner/familiar support, were less likely to initiate BF (OR of 0.44 and 0.75). Women not exposed to family BF were twice as likely to initiate BF compared to those exposed. More mixed method approach may better explain if changes in BF practices has emerged.

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## PREFACE

First and foremost, I would like to thank God Almighty for allowing me to start and finish this master's program and for the wonderful people that He has put in my path. I would like to acknowledge and deeply thank my two mentors; Dr. Tiffany Gary-Webb and Dr. Dara Mendez for all the support and encouragement you have demonstrated in these past 2 years and for providing me amazing opportunities and experiences that have added priceless value to my education.

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## 1.0 INTRODUCTION

Breastfeeding (BF) is a health indicator used to measure infant feeding practices for optimal infant growth and development.<sup>(1)</sup> This is due to the numerous benefits BF offers both the mother and the infant. In the US, BF rates have been on the rise in the last decade. According to data collected from the CDC's National Immunization Survey (NIS), the percentage of children ever breastfed rose from 71.4 in 2002 to 83.2 in 2015. Unfortunately, within the US, there's a disparity in BF rates between White and African American (Black) women where the Black population has significant lower BF rates when compared to White women.<sup>(2)</sup> Data from NIS also reported that 69.4 percent of Black women have ever breastfed (also described as BF initiation) in comparison to 85.9 percent of White women and 44.7 percent of Black women breastfed at six months (also described as BF duration) when compared to 62 percent of White women.<sup>(2)</sup>

To better understand the racial disparities in BF rates, this study focused on the factors that impact the BF habits of Black women. Prior studies on racial disparities have described how socioeconomic factors impact BF habits and most studies focus on BF initiation.<sup>(3-6)</sup> There are several studies that focused on how familial factors influence BF practices among Black women.<sup>(7-9)</sup> Yet it's unclear how these familial factors are defined and measured in the Black community. Also, it's unknown how these familial factors, along with a women's personal

exposure to BF, impacts BF habits particularly in the Black population of Pittsburgh. To address these gaps, this study addressed the following objectives:

- Described the infant feeding patterns of Black women in Pittsburgh
- Described partner and family influence, defined as BF encouragement, from both the women's families and/or partners and examine the association between partner/family influences and the two BF outcomes: ever BF (as BF initiation indicator) and BF at 6 months (as BF duration indicator).
- Described personal exposure to BF in the context of women having been breastfed as a child and/or having been exposed to other family members BF, then analyzed the association between personal BF exposure and the two BF outcomes: ever BF and BF duration.

In this study we incorporated the PEN-3 Cultural Framework as a guide in the variable selection and analysis to help represent the three domains that this framework describes. **The overall goal of this study was to establish a correlation between partner/family influences and BF exposure to breastfeeding initiation and duration practices among Black women of Pittsburgh PA.** By understanding the dynamic between partner/family influences and BF habits of the Black women, we can address challenges or barriers that may arise. The goal is to inform efforts and increase BF rates in the Black population and offer a healthier start to life to both children and mothers.

## 1.1 BACKGROUND

Breastfeeding (BF) is a health indicator used to measure infant feeding practices for optimal infant growth and development.<sup>(1)</sup> According to the World Health Organization (WHO), BF is the ideal infant feeding method for optimal nutrition, growth, and development. BF has also been found to be beneficial to the mother's health.<sup>(10, 11)</sup> When describing the biological benefits seen in infants, BF is directly involved in the development of the infant's immune system by perpetuating passive immunity, adequate function and maturation of the gastrointestinal (GI) system and brain development.<sup>(10)</sup> Passive immunity refers to the mother's developed immune cells passing to the infant's immune system which will help fight off various infections in the respiratory tract, GI tract, ears, and urinary tract.<sup>(11, 12)</sup> Studies have suggested that breastfed children are less likely to suffer from diarrheal illnesses and necrotizing enterocolitis (NEC), as well as less likely to suffer from respiratory and medial ear infections also known as otitis media.<sup>(10)</sup> Studies have also reported a lower incidence of childhood asthma, obesity, Sudden Infant Death Syndrome (SIDS), persistent recovery from preterm low birth weight (LBW) and infant mortality in children that were breastfed.<sup>(13, 14)</sup>

In terms of neurodevelopment, studies have shown that children breastfed over the age of four months were able to reach their developmental milestones, such as motor (e.g. crawling, walking) and cognitive (e.g. facial recognition, speech) function, earlier in comparison to those that were only formula-fed.<sup>(15)</sup>

There are well-known maternal benefits to BF as well. Short-term benefits include an accelerated recovery from childbirth and a reduction in the maternal response to stress since exclusive BF has been associated with parasympathetic nervous system stimulation, also known as rest and digest state.<sup>(11, 16)</sup> Pregnancy weight loss is enhanced due to milk production, and

prolong anovulation in the women's menstrual cycle can also be observed.<sup>(11)</sup> Attributable long-term positive effects of BF may include: a reduced risk of developing certain cancers (e.g. breast and ovarian), a decreased risk of developing osteoporosis, decreased risk in certain metabolic diseases like diabetes mellitus, and lower risk of cardiovascular disease.<sup>(11)</sup>

There are also economic benefits to breastfeeding on a larger scale. When analyzing its impact on healthcare costs, increasing BF rates could save the United States over \$13 billion taxpayer dollars including in both direct and indirect medical costs as well prevent an excess of 900 deaths per year.<sup>(17)</sup> Other studies demonstrate reductions in the cost buying of formula, fewer hospital visits, and less missed days as work for moms that return to the workforce.<sup>(11)</sup>

## **1.2 DISPARITIES IN BREASTFEEDING**

### **1.2.1 Breastfeeding Disparities**

When it comes to racial disparities in BF, Black women have the lowest BF initiation and duration rates when compared to White and Hispanic women, despite an overall increase in BF rates among all racial groups since 2003.<sup>(2)</sup> When describing BF practices, the NIS defines BF initiation when as a child breastfed at least once (ever breastfed) while BF duration is define as a child that was breastfed until the age of six months.<sup>(2)</sup> Data from the NIS shows that 68 percent of Black mothers-initiated BF with their young, of those only 41.1 percent breastfed at six months, and this number drops to 21.5 percent at age one. In comparison to White mothers, 87.5 percent initiated BF, of those 60 percent BF at six months and 37.8 percent till age one.<sup>(2, 18)</sup> At the state level, Pennsylvania's BF initiation rate in Black women was 72 percent compared to

80.6 percent seen Whites; when compared to rates specifically in Allegheny County, the geographic region that is the focus of the present study, Black women's BF initiation rate was 62.5 percent compared to 81 percent seen in White mothers.<sup>(19)</sup>

As previously mentioned, BF is associated with decreased rates of SIDS and infant mortality and persistent recovery from LBW.<sup>(13, 14)</sup> According to the CDC, Black cases were double the number of SIDS cases reported for Whites. The infant mortality rate in 2016 of Black children was 11.4 per 1000 births compared to 4.9 per 1000 births in White children and the rate of LBW in 2016 in Blacks was 11.37 compared to 5.21 seen in White children.<sup>(20, 21)</sup> These disparities in Black children makes increasing BF rate in the population a more urgent matter.

Most BF studies focus on socioeconomic factors as contributors of BF disparities. These findings show that low maternal education level, single marital status, high poverty rate and being a younger age, exacerbate low BF rates.<sup>(3, 7)</sup> Data on low-income Black women seen in several studies indicate that Black women are less likely to have access to adequate prenatal care and are less likely to receive prenatal and BF education from their medical health providers. Also, these women are less likely to have access to a lactation consultant.<sup>(22)</sup> Though socioeconomic status (SES) contributes to widening the gap in BF rates, it has proven not to be the sole contributor.<sup>(3)</sup>

To better understand the racial disparity in BF rates, from a socio-ecological perspective, many studies have focused on how *intrapersonal* factors (such as self-efficacy, BF knowledge) and community factors (such access to BF promoting services and programs) impact BF practices in black women.<sup>(22)</sup> Other studies have focused on how *interpersonal* factors such as peer, partner, and family support play a role in BF habits among women.<sup>(8, 23, 24)</sup>

### **1.2.2 Historical and Cultural Influences**

Historical and cultural influences are important in understanding how BF was practiced and perceived in the US Black population. During the slavery era, Black slaves were forced to breastfeed the children of their White owners and in some cases not able to nurse their own children.<sup>(25)</sup> In the 1900s with the surge of commercial formula, perceived as a commodity and social status symbol, BF that until then was the norm, became even less popular among all women. This may have added to the stigma that followed BF from slavery among the Black population.<sup>(26, 27)</sup> Other components like cultural and familial elements have also contributed to decreased rates of BF in the Black community. Qualitative studies have reported mothers' perceptions that prolonged BF had negative effects on the infant, such as making the baby "spoiled" "weak" and "overly-attached" to the mother.<sup>(5)</sup> Other studies indicate that the fear of pain caused by latching, the embarrassment of nursing in public and the sexualization of breast impacted the low BF rates.<sup>(22)</sup> Qualitative studies have suggested that BF intention is heavily influenced by how BF is viewed by the participant's mother, maternal grandmother, and partner.<sup>(5, 28)</sup> The focus of this study is to understand how familial and partner's influence impacts BF practices.

### **1.2.3 Familial Influences**

Familial influences have a large impact on infant feeding practices. These BF practices may be influenced by generational experience passed from mother to daughter or other influential women and family members. Yet, these influences may vary by race and place of origin. Studies focused on foreign born mothers that identify as Hispanic or Black revealed that



they were more likely to BF their young when compared to US born Black and White women.<sup>(29)</sup> Some studies have found that infant feeding habits in White women were determined by the mother's particular attitude towards BF, while Hispanic women made feeding decisions based on situational factors such as availability to pump. In contrast, black women based their feeding habits on the support provided from family and friends.<sup>(5, 8)</sup>

When focusing specifically on familial influences, several studies have focused on the role families play in BF practices. One study used the Theory of Planned Behavior to describe the mother's intent to exclusively BF. Among Black women, beliefs from family and the general public had a large influence on the intention to exclusively BF.<sup>(8)</sup> Other studies described how women's mothers and maternal grandmothers have an influential role in infant feeding practices.<sup>(28, 30-32)</sup> One qualitative study that measured mothers' perceptions of grandmother's knowledge and support revealed that mothers wanted grandmother to acknowledge the importance of BF, provide advocacy and acknowledge how BF was seen as a barrier.<sup>(30)</sup>

Other studies have analyzed how partner support influences BF feeding habits. Two studies in the literature revealed that mothers who BF often reported having partners supporting their BF choice as the preferred feeding habit.<sup>(33, 34)</sup> Another study analyzed influences on intention to BF among Black women at entry to the WIC program and reported that the opinion of the father of the baby had a strong association with the mothers BF intention.<sup>(28)</sup>

Exposure to BF, whether mothers had seen family members BF their young or mothers who were BF as a child is another influential factor that impacts BF habits. Studies that explore BF in Hispanic and Black population revealed that mothers that have a first-degree BF relative or close friend would most likely BF herself.<sup>(35)</sup> A study done in the early 1990s on BF initiation predictors, attitudes and practices among Blacks and Whites in rural Mississippi, reported that

among Black women, exposure to BF from a close family member or friend were two significant variables that favored BF initiation.<sup>(36)</sup> This same study also reported that female relatives' opinions and experiences were associated with a woman's BF intention.<sup>(28)</sup> In a study on BF decisions among adolescent mothers, it was reported that the teens were influenced by their mothers (who had breastfed them) in making the decision to nurse.<sup>(37)</sup>

### **1.3 GAP IN THE LITERATURE**

After reviewing the literature, the following gaps on BF and familial influence were found.

#### **1.3.1 Limited Studies on BF continuation**

Although many BF studies have described or documented familial influence, many studies just focused on BF intention and initiation. Of these studies, several collected participant data from interviews and surveys within days of delivery when BF practices may not have been established.<sup>(8, 33, 34, 37)</sup> Yet there are limited studies that establish familial influence with BF duration.

Also, in the literature, data collected from surveys that asks questions that determine if the mothers "ever breastfed" are used to describe initiation rates while data collected on "BF exposure until or after 6 months" are used to describe BF duration. Although many studies used these parameters to establish initiation and duration in their methodology, for the purpose of this study the terms used will be "ever BF" and "BF duration".

### **1.3.2 Studies lack a clear definition or measurement of what “support” means in a familial or partner context**

Some studies that measure family and/or partner support did not provide a clear definition of what support was. In many of the studies that analyze family influences, the word support isn't clearly defined. Questions on support were asked as a direct question such as “Do you feel supported by your family or partner?” or “Did your family support your decision to BF?”. Qualitative studies that analyzed family support gathered the information via questionnaires or family support arose as a theme in a focus group or interview.<sup>(30, 33, 37)</sup> Yet, the authors did not mention how support was defined or from the context in which it was mentioned. This is important since support can be defined several ways and may not have the same interpretation from woman to woman. In this study, in order to establish what support looks like, the survey used statements about the women's perception of encouragement from partner and family for women to indicate agreement/disagreement with: “My family's behavior and comments encouraged me breastfeed my youngest child/baby” and “My partner encouraged me to breastfeed my youngest child/baby” These questions were answered using the Likert scale that ranged from strongly agree to strongly disagree.

### **1.3.3 Limited studies on familial influences done exclusive in the Black population.**

Studies that focused on family influences solely in Black communities are very limited, and mostly use sample populations that are a mix of other racial backgrounds (most comparisons were done with Non-Hispanic Whites and Hispanics). One study presented sources of influence on intention among Black women at entry to WIC, only BF intention was measured<sup>(28)</sup>. One

qualitative study focused on initiating and sustaining BF among Blacks. Although they reported mixed messages from family and friend as a theme, the main objective of the study was not centered on familiar influences.<sup>(7)</sup>

#### **1.3.4 Application of PEN-3 framework to guide analyses of familial influence and BF practices**

The PEN-3 framework describes how culture affects health beliefs, behaviors and health outcomes. Its purpose is to better understand how the components of culture (e.g. perceptions, norms, beliefs, attitude and behavior) interact with a groups environment and impacts their health. The PEN-3 model has three cultural domains: Cultural Identity, Relationships and Expectations, and Cultural Empowerment.<sup>(38)</sup> Each domain is then divided into three factors with use the acronym PEN to define this particular construct. In the Relationship and Expectation, this domain fosters the acronym PEN in P: Perceptions, E: Enablers and N: Nurturers. It takes the attitudes, perceptions, the familial influences and the available resources of a given population to examine how these factors promote or discourage of a specific health care practice.

The PEN-3 model has been used to describe the behaviors and beliefs related to certain health issues like HIV/AIDS, smoking, cancer screening and cardiovascular health<sup>(38)</sup>. It has also been used in qualitative studies to sort and define themes centered around culture, with an emphasis on how family and community define health beliefs and practices of a particular group or population.<sup>(38)</sup> One study reported the used of the PEN-3 framework to gather information on infant feeding practices in the Black community.<sup>(9)</sup> Even though this study reported that Black women learn many of their feeding practice from family members and others within the community, this study focused on overall feeding practices and not just on BF.<sup>(9)</sup>

In the literature it's unclear how familial influences and partner support impact BF practices specifically BF duration. So, this study focused on the relationship and perception domain of the framework to analyze family/partner influences and kin nurturing decisions surrounding BF duration practices of Black women in Pittsburgh. The PEN-3 framework was also used to guide the variable selection in order understand how family and partner influences impact infant feeding practice, centering around BF.

## 2.0 STATEMENT OF PROBLEM

As previously stated, BF is a health indicator used to measure infant feeding practices for optimal infant growth and development.<sup>(1)</sup> This is due to the numerous benefits BF offers both the mother and the infant. In the US, BF rates have been on the rise in the last decade. According to data collected from the CDC's NIS, the percentage of children ever breastfed rose from 71.4 in 2002 to 82.5 in 2014. Unfortunately, within the US, there is a disparity in BF rates between White and Black women where the Black population has significantly lower BF rates.<sup>(2)</sup> Data from NIS also reported a BF initiation rate for Black women of 68 percent compared to 87.5 percent of White women and 41.1 percent of Black women breastfed at 6 months compared to 60 percent of White women.

In the literature, it is unclear how familial factors such as family/partner encouragement and/or support are defined and measured specifically among Black women. Another factor that is unclear is how a woman's personal exposure to BF impacts BF habits. To address these gaps, this study addressed the following objectives:

- Described infant feeding patterns of the Black women in Pittsburgh
- Described partner and family influence, defined as BF encouragement from both the woman's family and/or partner, and examine the association between partner/family influences and the two BF outcomes: ever BF and BF duration.

- Described personal exposure to BF in the context of the participant being BF as a child or exposure to other family members BF, then analyzed the association between personal BF exposure and the two BF outcomes: ever BF and BF duration.
- Used the PEN-3 Cultural Framework as the theoretical model to better understand partner/familial influence in the context of BF and a quantitative statistical analysis to establish the relationship between partner/family influences and BF exposure to breastfeeding practices among Black women with a focus on BF duration.

### 3.0 METHODOLOGY

This study was a secondary data analysis of data from the Pittsburgh Black Breastfeeding Research Study (PBBRS). This study was developed by the University of Pittsburgh in collaboration with the Pittsburgh Black Breastfeeding Circle (PBCC). The PBBC is a local organization that since 2014 has been dedicated to educating women of color on the topic of BF as well training community leaders to become BF advocates. Paired with the Midwife Center for Birth and Women's Health, the PBBC hosts bi-weekly meetings where they discuss several issues surrounding BF, offering peer support and BF knowledge to the community. In these meetings, mothers from the community express the day-to-day BF challenges they face and get BF advice and education from the lactation specialists and experts that lead the PBBC.

The self-administered survey was designed to capture the feeding practices of Black/African American women in Allegheny County using the online platform Qualtrics.<sup>(39)</sup> The eligibility criteria to enter this study were women who: 1) identify as Black/African American; 2) age 18 years or older; 3) currently have a child age two or younger; and 4) lives in the Pittsburgh area (Allegheny County) The recruitment tools used were flyers and brochures with all in the study's information. The flyers and brochures included a mini hyperlink and QR code that directed women to the online Qualtrics survey.<sup>(39)</sup> These flyers and brochures were then placed on various online recruitment platforms such as University of Pittsburgh study registries (i.e., Pitt+Me, Pediatric Pitt Net) as well as online social media groups on Facebook



(e.g. PBBC and Pittsburgh Brown Mama group page). Flyers were also placed in public spaces in public health agencies (e.g., Healthy Start, WIC, and Early Head Start) as well as shared among the with members of the Infant Mortality Collaborative of Allegheny County and the PBBC. This local organization established in 2014, has dedicated its efforts to educating women of color on the topic of BF, as well as training community leaders to become BF advocates. Paired with the Midwife Center for Birth and Women’s Health, the PBBC hosts bi-weekly meetings where they discuss several issues surrounding BF, offering peer support and BF knowledge to the community. In these meetings, mothers from the community express the day-to-day BF challenges they face and get BF advice and education from the lactation specialists and experts that lead the PBBC.

The PBBRS was funded by the Faculty Collaborating with Community Mini-Grant Award from University of Pittsburgh’s Center for Health Equity and was partially supported by the NIH Diversity Supplement grant number: R01 HL135218 with Dr. Dara Mendez as principal investigator. This study was approved by the Institutional Review Board at the University of Pittsburgh. All responses were anonymous and electronic informed consent was obtained from all participants at the beginning of the online survey. There was no direct compensation for participation in the study instead all participants were entered into a drawing and 30 were randomly selected to receive a \$20 gift card.

The PBBRS captures the infant feeding practices of Black women in Pittsburgh. The questions used in this survey were modeled after question from various national surveys and validated scales such as:

- The Pregnancy Risk Assessment Monitoring System (PRAMS)
- National Immunization Survey (NIS)

- National Survey of Children's Health (NSCH)
- National Health and Nutrition Examination Survey (NHANES)
- The Iowa Infant Feeding and Attitude Scale

In order to capture a global context of the infant feeding habits of the target population, the PBBRS collected data on several topics such as:

- General demographic and health questions (income, marital status, education, number of children etc)
- Household composition (how many people live in the household)
- Feeding patterns (exclusive BF, mixed feeding, formula feeding, introduction to solid food, pumping)
- Access to BF information during pregnancy
- Initial BF intention
- Feeding process during the immediate post-partum (skin to skin)
- Reason for not BF
- BF weaning
- Condition at the workplace (access to lactation room, pumping break-time etc.)
- Family and partner influences on BF
- Personal exposure to BF
- Perception questions related to BF (example: BF in public, appearance of breast etc.)

The timeframe of the survey started on April 1<sup>st</sup> and officially closed on Nov 6<sup>th</sup>, 2018. The analysis for this thesis included all data collected up to September 18<sup>th</sup>, 2018. The analytic sample for this thesis included 92 women that started the survey, 25 surveys were excluded for

not meeting the inclusion criteria and 7 had missing information. A total of 60 women's surveys were included in the analysis.

## 3.1 MEASURES

### 3.1.1 Outcome Variables

The key outcomes included: 1) *Ever Breastfed* was defined as participant's report of ever having breastfed her youngest child/baby. The response was coded as a binary variable (yes/no) 2) *BF duration* was defined as how long (in months) did the participant BF her youngest child/baby. This was categorized as (<1 month, 1-3 months, 3-6 months, 6 months+) in the questionnaire, but for statistical purposes, BF duration was converted to a binomial variable (less than 6 months and more than 6 months)

### 3.1.2 Exposure Variables

Partner/Family Influences: This was defined by questions regarding BF encouragement from both the woman's family and/or partner. The survey asked how strongly the woman agreed or disagreed on a Likert Scale (0-5) with the statements:

- "My family's behavior and comments encouraged me to breastfeed my youngest child/baby."
- "My partner encouraged me to breastfeed my youngest child/baby."

For statistical purposes the Likert scale was combined to three potential answers (strongly agree, neither agree nor disagree, strongly disagree)

Personal Exposure to BF: In this construct, we used questions related to personal experience with breastfeeding as an act:

- “Were you BF as a child?” coded as a binomial variable (Yes or No)
- “Did you ever see anyone BF?” also coded as a binomial variable (Yes or No)

### **3.1.3 Covariates:**

The variables below are known to be associated with rates of BF:

- Age: open-ended question for women to write in their age. We expressed age as a continuous variable
- Education: was categorized as women’s highest degree completed (less than high school diploma/equivalence, high school graduate/equivalence, associate degree, bachelor’s degree, graduate school)
- Gross annual household income was categorized as <\$10,000, \$10,001-\$30,000, \$30,001-\$50,000, \$50,001-\$70,000, \$70,001+
- Relationship status: categorized as single-never married, married and other
- Current job situation: categorized as: employed, and unemployed
- Additional income: categorized as: none, social security, disability, food assistance, cash assistance, other. For statistical purposes these recoded to binomial variable “yes/no”
- Health insurance status: defined as private health insurance from work, private health insurance from parents, Private Health Insurance market place, Medicaid. For statistical purposes there were also recategorize to binomial variables private (all private insurance and marketplace) and public (Medicaid and other)

- Number of children: categorized as 1 child, 2 children, 3 or more children
- WIC recipient: defined as whether the participant participates in the WIC program (yes/no).

## 4.0 STATISTICAL ANALYSIS

STATA statistical software was used for data analysis<sup>(40)</sup>. We conducted analyses to address the following aims:

### **4.1.1 Aim 1: *Describe Infant feeding patterns of the Black women in Pittsburgh, Allegheny.***

We conducted univariate analysis to determine the proportion of the population that was ever breastfed and the proportion that did not breastfeed. We also examined among those participants who were able to BF, how long they BF. Finally, we examined the relationship between the two infant feeding outcomes (ever BF and BF duration) and socio-demographic characteristics (e.g., age, income).

### **4.1.2 Aim 2: *Examine the association between partner/family influences and the two BF outcomes: ever BF and BF duration.***

We performed a logistic regression to examine the association between the familial influences (family encouragement and partner encouragement) and the binary outcome of ever BF. We then conducted a linear regression to examine familial/partner influences in association with BF duration.

**4.1.3 Aim 3: *Analyze the association between personal BF exposure and the two BF outcomes: ever BF and duration.***

We conducted a logistic regression to examine the association between the outcome of personal BF exposures (where you BF as a child, did you see anyone BF) and the binary outcome of ever BF. We then performed a linear regression to examine personal BF exposure in its association with BF duration.

## 5.0 RESULTS

The PBBRS surveys was open from April 1<sup>st</sup>, 2018 to November 6<sup>th</sup>, 2018. A total of 112 participants started the survey, and of those 82 completed the survey. The analysis for this thesis captured data from April to September 2018. A total of 92 surveys were started: of those, 25 surveys were excluded for not meeting the inclusion criteria and seven had missing information. A total of 60 women had complete data and were included in this analysis.

The demographic characteristics of the sample population were stratified by the two outcomes – those mothers that did initiate BF with those that did not (“Ever BF: No” and “Ever BF: Yes”). Then, these same covariates were stratified with mothers that BF less than six months and mothers that BF for more than six months (see Table 1 and 2). When looking at data on BF initiation (Ever BF: Yes vs Ever BF: No) it revealed that the average age of the participants was 28. About 86.6 percent (52/60) did initiate BF (ever BF: yes) compared to 13.3 percent (8/60) of the sample that did not (ever BF: no).

In the group that did initiate BF: 82 percent had an income of more than \$10,000 a year, 54.9 percent were married, and 94.1 percent had an associate degree or higher in education. Around 64.7 percent had more than one child, 68.6 percent had participated in the WIC program, 58 percent were employed, and 51.9 percent had public insurance (Medicaid).

When compared to the sample group that did not initiate BF: 75 percent had an income of more than \$10,000 a year, 62.2 percent were married and only 50 percent had an associate



degree or higher in education. Similar to the mothers that did BF: 50 percent also had more than 1 child, 75 percent participated in the WIC program, 62 percent were employed, and 75 percent had Medicaid.

A paired t-test was performed in order to see the difference between these two groups in which the end results showed that the only significant statistical differences found between the group of women that initiated BF and those that did not, were in education and additional income (p-value <0.05). Data showed that women that did initiate BF had more women with a higher education levels than those women that did not initiate BF. In terms of additional income around 25% of mothers that did not BF received additional income in comparison to mother that did BF. (See Table 1)

When looking at the data for BF duration, the sample population was stratified into two groups: women that BF for six months or less (Less than 6 months) and mother that BF for six months or more (More than 6 months). In this sample population the average age of 29.

When looking at the group that BF for less than six months: 66 percent had annual income of more than \$10,000, 53 percent were single, and 86.6 percent had an associate degree or higher. About 60 percent had more than one child, 66.6 percent participated in the WIC program, 66.6 percent were employed, 28 percent received additional income and 46.6% had Medicaid as insurance.

Data from the group that BF for more than six months revealed that 88.9 percent had an income of \$10,000 or more, 62.8 percent were married, and 97.3 percent had an associate degree or higher. About 66.6 percent had more than child, 68.5 percent participated in the WIC program, 55.8 percent were employed, 72 percent receiving additional income and 50 percent

had Medicaid as insurance. A paired t-test was also performed, and it determined that there were no significant differences in the sample population when stratified by BF duration. (See Table 2).

When analyzing partner encouragement part of the partner/familial influences, in association with initiation (women that BF versus women that did not BF), we found that of women that initiated BF, 75.5 percent strongly agree with the statement indicating partner encouragement (“My partner encouraged me to breastfeed my youngest child/baby.”). Similarly, 71 percent of the women that did not initiate BF strongly agree with the statement of partner encouragement. When analyzing family encouragement part of the partner/familial influence, both women that did initiate BF and those that did not BF (50 percent and 42 percent respectively) strongly agree with the statement “My family’s behavior and comments encouraged me to breastfeed my youngest child/baby”. Data also showed that 39 percent of women that initiated BF and 37.5 percent of women that did not BF, were breastfed as a child. However, 71 percent of women that initiated BF versus 83 percent of women that did not BF had family members that BF their young. (See Table 3).

Partner/family influences were then analyzed by duration (women that BF for less than 6 months versus women that BF for more than 6 months) and demonstrated that 72.7 percent of women that BF less than six months and 76.6 percent of women that BF for more than six months strongly agreed with the statement on partner encouragement. Then we see that 53.3 percent of the women that BF for less six months and 48.4 percent of women that BF for more than six months agreed with the family encouragement statement. Among women that BF for less than 6 months, 50 percent were BF as a child and 75 percent had seen a family member BF. We then compared data to women that did BF for more than 6 months and found that only 36

percent of these women had been BF as a child and 68 percent had seen family member BF their young. (See Table 4)

We then used logistic regression to examine the association between partner/familial influences and BF initiation (defined as ever BF) as well as duration, defined as BF for more than six months. We compared to the number of women that neither agree nor disagree with the statement on partner encouragement and compared it to the number of women that to strongly agreed (reference group) and found that women from the first group were 1.7 (CI: 0.12, 11.5) times more likely to initiate BF when compared to the reference group. Women that strongly disagreed with the partner encouragement statement were less likely to BF (OR of 0.44 and CI of 0.03 - 5.11) when compared of with the reference group. In the analysis of family influence, women that neither agreed nor disagree as well those that strongly disagreed with the statement that family encouraged BF were less likely (OR: 0.75 CI 0.06-8.54) to initiate BF when compared to the reference group (strongly agreed). (See Forest Table).

When comparing partner encouragement with BF duration, women that neither agreed nor disagreed as well as those that strongly disagree with the statement partner encouragement were less likely to BF beyond six months compare to those that strongly agreed (OR of 0.92 [CI: 0.15-5.50] and 0.61 [CI: 0.49-7.70] respectively). When comparing women that neither agreed nor disagreed with the family influence statement, it showed that women that neither agree nor disagree with the statement of family influence were 2 times more likely to BF beyond six months compared to those that strongly agree (OR: 2.4 [CI 0.24-25.15]).

When analyzing personal exposure with BF initiation, women that were not BF as a child were less likely to initiate BF (OR: 0.93 [CI:0.19 – 4.39]) when compared to those women that

were BF as a child. Yet when comparing these women with BF duration, women that were not BF as a child were more likely to BF their young beyond six months (OR: 1.75 [CI:0.46 – 6.65]).

Women that had no family members BF their young were two times as likely to BF their young when compared to those that did see BF in their family (OR: 2.03 [CI: 0.21-19.11]). While women that did not see family members BF their young were also more likely to BF beyond six months (OR: 1.36 [CI: 0.30-6.14]) when compared to those that did see family BF their young. Due to the small sample size and the large CI intervals seen in our preliminary results, no variable was adjusted during the final data analysis. (See Forest Table)

## 6.0 TABLES

**Table 1. Basic Demographics of Black Women that Participate in the PBBFC Study Survey Based on BF Initiation**

	<b>Overall (N=60)</b>	<b>Ever BF (No) (N=8) (13.3%)</b>	<b>Ever BF (Yes) (N=52) (86.6%)</b>	<b>P-Value</b>
<b>Age M(SD)</b>	29.63 (5.4)	28 (7.0)	29.8(5.2)	0.40
<b>Household Income N (%)</b>	60			0.95
Less than \$10,000	11 (18.3)	2 (25.0)	9 (17.3)	
\$10,001-\$30,000	19 (31.6)	3 (37.5)	16 (30.7)	
\$30,001-\$50,000	7 (11.6)	1 (12.5)	6 (11.5)	
\$50,001-\$70,000	10 (16.6)	1 (12.5)	9 (17.3)	
> \$70,001	13 (21.6)	1 (12.5)	12 (23.0)	
<b>Marital Status N (%)</b>	59			1.00
Single	22 (37.2)	3 (37.5)	19 (37.2)	
Married	33 (55.9)	5 (62.5)	28 (54.9)	
Other	4 (6.78)	0 (0)	4 (7.8)	
<b>Education N (%)</b>	60			<b>0.005</b>
Less than HS	1 (1.6)	0	1 (1.9)	
HS Graduate	6 (10.0)	4 (50.0)	2 (3.8)	
Associate Degree	26 (43.3)	2 (25.0)	24 (46.1)	
Bachelor's Degree	15 (25.0)	2 (25.0)	13 (25.0)	
Graduate	12 (20.0)	0	12 (23.0)	
<b>Number of Children N (%)</b>	60			0.51
1 child	19 (31.6)	1 (12.5)	18 (34.6)	
2 children	23 (38.3)	4 (50.0)	19 (36.5)	
3 or more children	18 (30.0)	3 (37.5)	15 (28.2)	
<b>WIC Participant N (%)</b>	59			1.00
Yes	41 (69.4)	6 (75.0)	35 (68.6)	
No	18 (30.5)	2 (25.0)	16 (31.3)	
<b>Current Job Situation N (%)</b>	58			1.00
Employed	34 (58.6)	5 (62.5)	29 (58.0)	
Unemployed	24 (41.3)	3 (37.5)	21 (42.0)	
<b>Additional Income</b>	59			<b>0.016</b>
Yes	57 (96.6)	2 (25.0)	0	
No	2 (3.3)	6 (75.0)	51 (100.0)	
<b>Type of Insurance</b>	60			0.27
Private	27 (45.0)	2 (25.0)	25 (48.0)	
Public	33 (55.0)	6 (75.0)	27 (51.9)	

**Table 2. Basic Demographics of Black Women that Participated in the PBBFC Study Survey Based on BF**

**Duration**

	<b>Overall (N=51)</b>	<b>BF Less than 6 Months (N=15) (29.4%)</b>	<b>BF More than 6 Months (N=36) (70.5%)</b>	
<b>Age M(SD)</b>	29(5.2)	30(6.5)	29 (6.5)	0.78
<b>Household Income N (%)</b>	51			0.20
Less than \$10,000	9 (17.6)	5 (33.3)	4 (11.1)	
\$10,001-\$30,000	15 (29.4)	3 (20.0)	12 (33.3)	
\$30,001-\$50,000	6 (11.7)	1 (6.67)	5 (13.8)	
\$50,001-\$70,000	9 (17.6)	1 (6.67)	8 (22.2)	
> \$70,001	12 (23.5)	5(33.3)	7 (19.4)	
<b>Marital Status N (%)</b>	51			0.28
Single	19 (38.0)	8 (53.3)	11 (31.4)	
Married	28 (56.0)	6 (40.0)	22 (62.8)	
Other	3 (6.0)	1 (6.6)	2 (5.7)	
<b>Education N (%)</b>	51			0.32
Less than HS	1 (1.9)	1 (6.6)	0	
HS Graduate	2 (3.9)	1 (6.6)	1 (2.7)	
Associate Degree	23 (45.1)	6 (40.0)	17 (47.2)	
Bachelor's Degree	13 (25.4)	5 (33.3)	8 (22.2)	
Graduate	12 (23.5)	2 (13.3)	10 (27.7)	
<b>Number of Children N (%)</b>	51			0.92
1 child	18 (35.2)	6 (40.0)	12 (33.3)	
2 Children	19 (37.2)	5 (33.3)	14 (38.8)	
3 Children	14 (27.4)	4 (26.6)	10 (27.7)	
<b>WIC Participant N (%)</b>	50			1.00
Yes	34 (68.0)	10 (66.6)	24 (68.5)	
No	16 (32.0)	5 (33.3)	11 (31.4)	
<b>Current Job Situation</b>	49			0.54
Employed	29 (59.1)	10 (66.6)	19 (55.8)	
Unemployed	20 (40.8)	5 (33.3)	15 (44.1)	
<b>Additional Income</b>	50			
Yes	50 (100.0)	14 (28.0)	36 (72.0)	
No	0	0	0	
<b>Type of Insurance</b>	51			1.00
Private	25 (49.0)	7 (46.6)	18 (50.0)	
Public	26 (50.9)	8 (53.3)	18 (50.0)	

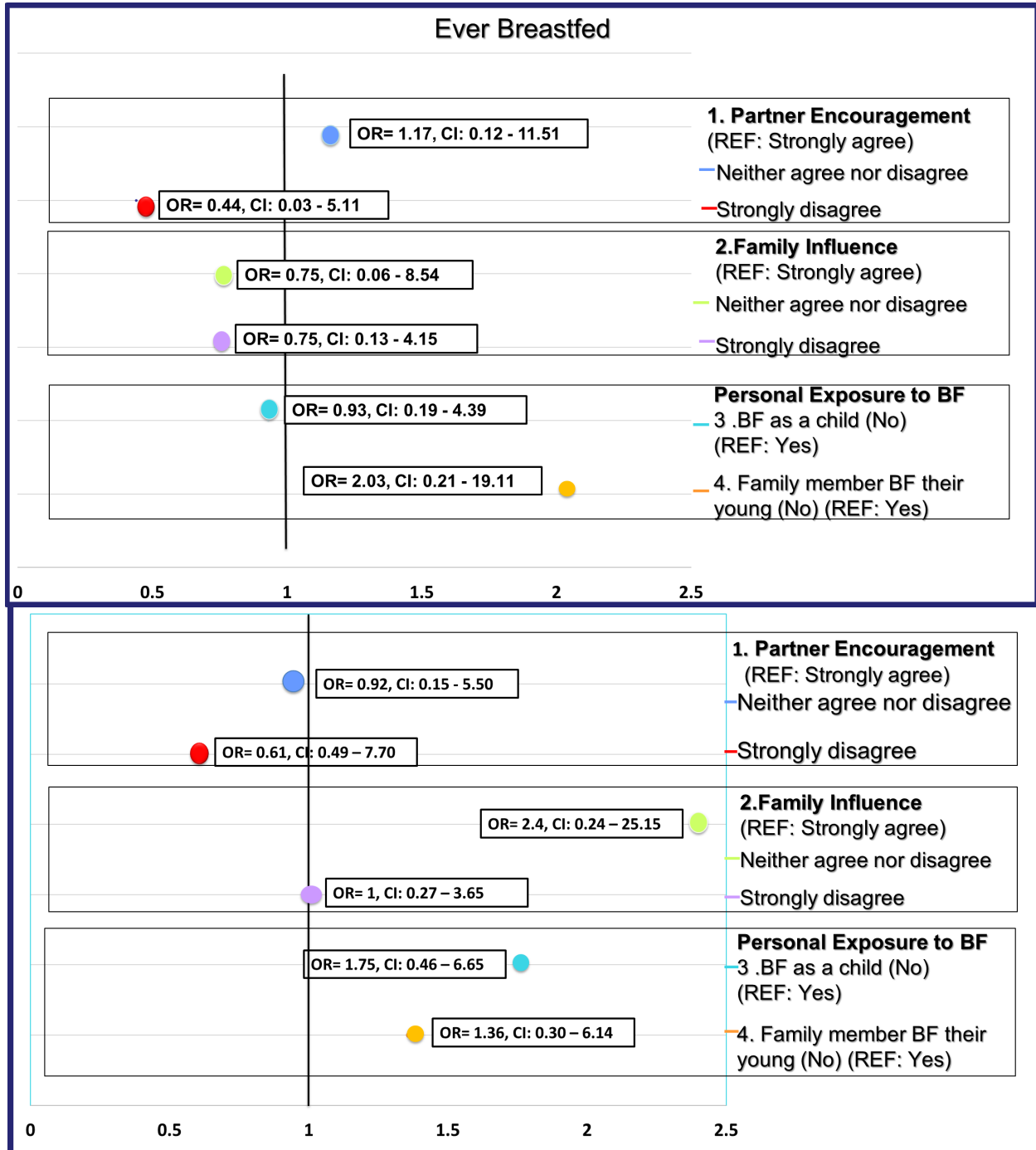
**Table 3. Partner/Family Influence and Personal Exposure vs BF Initiation**

	<b>Overall</b>	<b>Ever Breastfed NO (N=8)</b>	<b>Yes (N=52)</b>	<b>P-Value</b>
<b>Partner Encouragement</b>	52			<b>0.78</b>
Strongly Agree	39 (75.0)	5 (71.4)	34 (75.5)	
Neither agree nor disagree	9 (17.3)	1 (14.2)	8 (17.7)	
Strongly disagree	4 (7.69)	1 (14.2)	3 (6.6)	
<b>Family Influence</b>	55			<b>1.00</b>
Strongly Agree	27 (49.9)	3 (42.8)	24 (50.0)	
Neither agree nor disagree	7 (12.7)	1 (14.2)	6 (12.5)	
Strongly disagree	21 (38.1)	3 (42.8)	18 (37.5)	
<b>We You BF as a Child</b>	54			<b>1.00</b>
Yes	21 (38.8)	3 (37.5)	18 (39.1)	
No	33 (61.1)	5 (62.5)	28 (60.8)	
<b>Family member that BF their children (personal exposure)</b>	51			<b>1.00</b>
Yes	37 (72.5)	5 (83.3)	32 (71.1)	
No	14 (27.4)	1 (16.6)	13 (28.8)	

**Table 4. Partner/Family Influence and Personal Exposure vs Breastfeeding Duration**

	<b>Overall</b>	<b>Less than 6 months 15 (29.4)</b>	<b>More than 6 Months 36 (70.5)</b>	<b>P-Value</b>
<b>Partner Encouragement</b>	45			<b>1.00</b>
Strongly agree	34 (75.5)	8 (72.7)	26 (76.4)	
Neither agree nor disagree	8 (17.7)	2 (18.1)	6 (17.6)	
Strongly agree	3 (6.6)	1 (9.0)	2 (5.8)	
<b>Family's Encouragement</b>	48			<b>0.85</b>
Strongly agree	24 (50.0)	8 (53.3)	16 (48.4)	
Neither agree nor disagree	6 (12.5)	1 (6.6)	5 (15.1)	
Strongly agree	18 (37.5)	6 (40.0)	12 (36.3)	
<b>Were You BF as a Child</b>	45			<b>0.49</b>
Yes	18 (40.0)	6 (50.0)	12 (36.3)	
No	27 (60.0)	6 (50.0)	21 (63.6)	
<b>Family member that BF their children (personal exposure)</b>	44			<b>1.00</b>
Yes	31 (70.4)	9 (75.0)	22 (68.7)	
No	13 (29.5)	3 (25.0)	10 (31.2)	

**Table 5. (Forest Table) Association Between Partner/Family Influences and BF Initiation and Duration (Odds Ratios, Confidence Intervals)**





## 7.0 DISCUSSION

The goal of this study was to examine BF support from both family and partner and determine its influence on BF initiation and duration among Black women in Pittsburgh. In our study, we found that with the exception of education, our sample group of BF mothers weren't statistically different from mothers that did not BF. When we addressed the variable of education, we see a significant difference in BF initiation, meaning that sample group of women that initiated BF had higher levels of education compared to those that did not initiate BF. Yet education was not significantly different when compared mothers that BF for less than six months with those that BF for more than 6 months. This finding seen with education and BF initiation correlates with the literature that states that women that are more educated are more likely to initiate BF.

We found that mothers that disagree with the statement that partners encouraged BF were less likely to initiate BF and continue BF beyond six months. Our findings corroborate with the large body of evidence that attest that partner support has a significant weight in BF practices. Since BF knowledge in the mother has been attributed to better BF outcome, providing BF knowledge to the partner has also been associated with increase BF support in the mother.<sup>(41)</sup> A study done with fathers from Cleveland OH participated in a BF education program. This study concluded that men that participated in the education session were more likely to want their next baby to be breastfed and endorsed learning more about BF.<sup>(42)</sup> This findings suggest that more

partner BF education and involvement would increase BF support toward the mother which may impact BF initiation and duration in a positive way.

Another important finding was that women that did not see a family member BF were two times more likely to initiate continue to BF than those that did see family BF. We see in the literature that having family and close friends BF their young and being breastfed as a child increases the likelihood of a women to BF, it conveys the message that BF can seen as the norm<sup>(43, 44)</sup>. Yet, our findings may suggest that there may be a shift in the BF trends which assumes that more women are initiating BF regardless of family history of BF. In a qualitative study that examined the personal BF experiences of Black women who felt they were successful at BF, themes related to empowerment and self-determination were described as the driving force behind BF intention and initiation<sup>(45)</sup>. It would be interesting to see if BF self-efficacy plays an influential role in BF practices in the Black population of Pittsburgh and might explain the shift in the way BF is seen in the Black community.

We also found that women disagreed with statements “that family encourages me to BF” are less likely to initiate BF. As we have hypothesized, family support has a large influence in BF practices in general in the Black community since a lot of the feeding habits are passed down from mother to daughter or grandmother to granddaughter. Because of this, its important to create an environment where BF can be seen as both beneficial and achievable especially in the eyes of mother and grandmothers. A qualitative study by Gassley et al. geared toward grandmother of nursing mothers, had as an objective to explore the nursing mother’s perception of grandmothers BF knowledge and support. In the results, mothers expressed: (1) the need to have grandmother exhibit “loving encouragement”, (2) to value BF as an optimal form of infant feeding and (3) be their BF advocate.<sup>(30)</sup> These finding further suggest the importance of getting

family (mother, grandmother) and partner involved in the BF process and discussion along with the mother in both the prenatal and the postpartum period.

One of the objectives of this study was to describe partner and family support. For this to be accomplished we needed to incorporate into our survey a clear language of what support looked like. We then looked in the literature for examples of terms and statements that can provide a concise definition. We found that in a mixed method study, Bentley et al., used multiple choice questions about “How father of baby thinks should feed baby” and “How female family thinks you should feed baby” in order get partner and family’s perspectives<sup>(28)</sup>. Wiemann et al, presented statements like “Mother wanted to BF” and “Partner wanted BF” in efforts to try to measure support.<sup>(37)</sup> For our study we used a language that capture BF encouragement by combining physical (actions or behaviors) or verbal cues. By using language like “My partner encourages me to BF” and “My family’s behavior and comments encouraged me to breastfeed my youngest child/baby”, we were able to capture a clearer perspective of support

Finally, an important aspect of this study was the composition of the sample population. All the participants of the sample identified as Black women and both BF initiation and duration were analyzed. As previously stated, in the literature most studies that focus on BF in Black communities focus on BF initiation and intention and few on BF duration in this population. This study was able to analyze both initiation and duration in a sample group composed of all Black mothers. Approximately 60 percent (32/57) of the sample population belonged to mommy group or a BF support group. Around 62 percent of mothers that initiated BF and 69.4 percent of all mom that BF beyond 6 months were part of a mother and BF support group. This would explain the overall high BF rate compared when compared the county, state and national average. Community based BF education programs and support groups like the PBBC can provide not

only basic knowledge on the importance of BF to mother and her family, they can also help dissipate myths and stories that would deter women and families to BF. In some cases, these support groups, are the only places that provide the BF support needed.

The next steps for this research could include expanding with a mixed method approach, in a larger population to help correlate with the findings of this study. An example of this could include interventions targeted to increase BF knowledge for partner and family members and evaluate its impact on BF advocacy and BF outcome. It would also be interesting for future studies to analyze the different types of support that may contribute to BF practices such as financial support, structural support (availability of breast-pump, spaces to pump etc) emotional support and medical support. In our local area, more studies should be done to describe the issues or barriers Black women are facing that are causing them to wean or stop BF their young and if these issues correlate with what's in the literature. Lastly, more studies that aim to identify if other social factors such as systematic racism are contribute to Black women not being able to BF their young as recommend.

## 8.0 LIMITATION

One possible limitation that might affect the external validity is the small sample and the fact 60 percent of all the sample population belonged to a BF support group. Thus, the majority of our sample had experience with BF and may not have been representative of the target population of Black women in the Pittsburgh area. Another potential limitation would be that since the survey was conducted completely online, women without access to the internet technology were not able to participate. In addition, the lack of monetary compensation as an incentive may have contributed to low participation. Hopefully, larger well-funded projects able to provide more attractive compensation to participants may have greater participation. Finally, although specific language was used to capture what encouragement looked like we may not be able to capture other means of support like, financial, structural. More mixed methods and multi-level approaches are needed in order to better understand the drivers that are contributing to the BF gap. Special focus should be placed on BF duration since BF rates fall dramatically during the first 4 months post-partum. The goal is that these BF studies is to produce findings that may contribute to the shifting norms will be to make BF the norm so that Black children a receive a quality start to life.

## APPENDIX: THE PITTSBURGH BLACK BREASTFEEDING SURVEY STUDY FLYER

# The Pittsburgh Black Breastfeeding Research Study

Black/African American mothers in the Pittsburgh area with children ages 2 and younger are invited to participate in a research study about infant feeding practices.

### Is it necessary to have breastfed?

You do not need to have breastfed to be eligible to participate.

### What will you need to do?

Complete an online survey by scanning this

QR code:



or by going to

<http://pi.tt/bfsurvey>

There is no compensation provided to you for taking part in this research study. However, to thank participants for volunteering for this research study, **we will give 30 participants chosen at random a \$20 gift card.** The winner will be notified and mailed the gift card.

**For more information,  
please contact us at  
[blackbf@pitt.edu](mailto:blackbf@pitt.edu) or  
412-383-0574.**

Principal Investigator:  
Dara D. Mendez, PhD, MPH

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