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# The Rates of Mothers Who Continually Breastfeed After Implemented Breastfeeding Teaching

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**The Rates of Mothers Who Continuously  
Breastfeed  
After Implemented Breastfeeding Teaching**

An undergraduate honors thesis submitted in partial  
fulfillment of the requirements for the degree of  
Bachelor of Science in Nursing

By

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University of Arkansas  
Bachelor of Science in Nursing

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University of Arkansas

### **Introduction:**

Many mothers are unaware of the benefits of breastfeeding. This lack of knowledge leads to an inability to weigh the advantages and disadvantages of the potential source of nutrition their infant will receive during his or her first months of life.

Many mothers never even attempt to breastfeed their infant. Even among the mothers who do initially choose to breastfeed, the majority deviate to other forms of feeding early in the postpartum period. Despite the fact that most major medical organizations encourage exclusive breastfeeding through the first six months of an infant's life, the CDC report for 2013 claims the number of mothers exclusively breastfeeding in Arkansas at 6 months to be strikingly low at 9.2%. Considerable efforts are being made to dramatically improve this.

### **Literature Review:**

Breastfeeding is associated with significant health advantages and overall improved health outcomes for both the mother and child. It is a unique and highly efficient process that protects and nourishes the offspring; research has demonstrated the immunological, developmental, psychological, socioeconomical, and environmental benefits of breastfeeding as the sole source of infant nutrition [3, 4, 16, 24]. Breast milk is the preferred nutritional source for infants through the first six months of life and is highly recommended through the first year of life [15, 22]. If 90% of infants in the United States were breastfed through the first six months of life, approximately 911 deaths would be prevented annually [10]. Studies

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have linked the benefits of breastfeeding to decreased incidence of infections, diarrhea, otitis media, gastroenteritis, upper and lower respiratory issues, urinary tract disorders, developing asthma, and becoming obese during infancy and adulthood. Part of this is due to the passive and long-lasting active immunity provided by the breast milk. The unique affects breastfeeding has on limiting the risk for obesity leads children to have higher self-esteem and fewer behavioral and psychiatric disorders, as well as a decreased risk of premature mortality, eating disorders, and cardiovascular disease [12, 14, 15, 16, 21]. Exclusively breastfeeding infants has been reported to facilitate brain development, leading to higher IQ scores and larger vocabularies [1, 7, 15,18, 21]. Additionally, breastfeeding has been linked to lower blood cholesterol for infants later in life, as well as lower infant mortality and morbidity across the globe. Breastfeeding has even been considered a method of treating neonatal abstinence syndrome caused by opioid abuse during pregnancy by shortening the extent of the syndrome and shortening the length of hospitalization; breastfeeding is considered protective for the neonates who are experiencing withdrawal and gives the mothers a chance to hold an active role in the treatment process [23]. Mothers who breastfeed are shown to be at a decreased risk for breast and ovarian cancers, postpartum bleeding, Type 2 diabetes, and depression [1, 3, 15,19]. The mothers who commit to breastfeed for longer than four weeks have been shown to continually make better nutritional choices for their infants, further reducing the child's risk of obesity later in life [16]. Beyond the aspect of health advantages, breastfeeding helps to establish the maternal-infant bond that is necessary for growth and development, and it is very cost-effective [1,

3, 6].

Despite the numerous benefits that promote breastfeeding, there are still many factors that lead mothers to cease breastfeeding after beginning or hinder mothers from ever even initiating breastfeeding. These factors include: mother's obesity, breastfeeding pain, lack of confidence, inadequate amounts of milk production, maternal employment, diabetes, high blood loss, and lack of privacy [4, 5, 7, 10, 15, 22, 23, 24]. There are also cultural and institutional barriers that prevent full implementation; research notes an association of low education and socioeconomic status with low breastfeeding rates [11, 13, 19, 23]. Demographics show a positive association with breastfeeding and non-African American ethnicity, previous breastfeeding experience, older maternal age, and being married [13]. Many moms claim breastfeeding to be devastatingly different from what their expectations were, stating there is a need for clarity regarding feeding frequency, length, common challenges, and technique. They report embarrassment, lack of knowledge regarding breastfeeding, fear of not producing adequate amounts of milk, avoidance of pain, disliking the act of breastfeeding, and lacking social and professional support as reasons they choose to supplement their infants [12, 16, 23].

In order to counteract the many factors that deter mothers from breastfeeding, lactation consultants and primary care providers have implemented information sessions and pro-breastfeeding resources to raise the awareness of breastfeeding to new mothers throughout the postpartum period. Across the board, these best practice interventions have consistently raised rates of exclusive

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breastfeeding duration and intensity. One study claimed that promoting breastfeeding through an education program is the single most effective intervention towards exclusive breastfeeding [15]. Prenatal breastfeeding intention has been proven to be a strong indicator of breastfeeding initiation and duration, but prenatal education is not enough. The continued support of experts through the antepartum and postpartum periods allows mothers to breastfeed for longer durations and sustain through the initial feelings of vulnerability, disappointment, and exhaustion [10, 12, 16]. Nurses and lactation consultants have an instrumental ability to disaffiliate the maternal identity from breastfeeding success and meet the individual's physical and emotional needs. Even among the women who face difficulties, if supported at their health care facility, these mothers are more likely to continue breastfeeding [4, 13, 24]. A two-fold increase of breastfeeding at 3 months was noted in one study and an increase from 33% breastfeeding to 60% breastfeeding after lactation services were underway was noted in another study [2, 4]. Another study showed the importance of supporting and providing education with a focus on pumping for employed mothers; the study showed that working mothers who received breastfeeding education continued exclusive breastfeeding for a longer duration compared with working mothers who didn't meet with a lactation consultant [9, 22]. Simply initiating the use of the breast pump was shown to increase breastfeeding duration [9]. Nurses and other healthcare personnel play a vital role in promoting and supporting optimal breastfeeding practices; breastfeeding education gives the mother the chance to build confidence and make an informed decision regarding her baby's nutrition, while increasing the nurses'

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overall knowledge of breastfeeding simultaneously [2, 3, 20]. Prenatal education, postpartum support and the provision of breastfeeding resources increased exclusive breastfeeding by 20.4% at one facility and overall has been shown to improve breastfeeding outcomes [1, 3, 8, 12]. Washington Regional Medical Center in Fayetteville, Arkansas has implemented a program to increase the knowledge base regarding breastfeeding to mothers and to provide pro breastfeeding resources in the hope of increasing the number of mothers whom breastfeed upon discharge. The aims of this study is to analyze whether the exclusive breastfeeding intervention increased the number of women exclusively breastfeeding at discharge.

- Does implemented teaching from a lactation consultant at Washington Regional Medical Hospital increase the rate of mothers who initially indicated the desire to breastfeed and are continuously breastfeeding upon discharge?
- Is there a difference in the number of infants given supplemental feedings pre- versus post- exclusive breastfeeding intervention?

### **Methodology:**

This study will be conducted following approval of the University of Arkansas Institutional Review Board (IRB) and the Washington Regional Medical Center Quality Improvement Department.

### Sample.

The sample for this study will consist of childbearing women admitted to the



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maternal services for delivery between December 2014 and May of 2015. Women delivering stillbirth infants, infants who require additional medical care that prevents breastfeeding, infants with genetic disorders (e.g., cleft lip/palate, Trisomy), and infants receiving phototherapy for hyperbilirubinemia will be excluded from the study.

### Design.

This study will use a pre- post- retrospective medical records review to compare prior and post implementation of WRMC's exclusive breastfeeding intervention. All data obtained from the electronic medical records will be de-identified following the guidelines of the Health Insurance Portability and Accountability Act (HIPAA). A random case number will be assigned to each medical record reviewed so when data is extracted the identity of the patient is protected. Data that will be extracted from the electronic medical records is outlined in Table 1.

**Table 1. Electronic MR Data Extraction**

Frequency of Supplementation if applicable	Attended Breastfeeding Class In Hospital
Vaginal/Cesarean Delivery	Seen By Lactation Consultant While In Hospital
Gestational Age	Preference On Feeding Method On Admission

Table 1. Data that was extracted from the medical record of each member of the patient population

### Statistical Analysis

A chi-square goodness of fit test was used to analyze the rates of mothers who

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exclusively breastfeed through discharge. A Spearman rank-order correlation was calculated to measure the strength and direction of the association between the number of times the mothers supplemented their infant pre- versus post-breastfeeding intervention.

### **Results:**

Between December 27<sup>th</sup>, 2014 and March 1<sup>st</sup>, 2015, a total of 208 women indicated that they would breastfeed exclusively upon admission to the Labor and Delivery Unit at Washington Regional Medical Center. Of these 208 women, 195 met the criteria to be included in this study. The charts for these 195 women were examined, and the following data was collected. The mean gestational age for the patient population was 38.41 weeks. The minimal gestation age was 30 weeks, and the maximum gestation age was 41 weeks. Of the 195 mothers, 135 (69.2%) gave birth to their infants through vaginal delivery. The other 60 (30.8%) gave birth to their infants via cesarean section. The reasons women deviated from exclusive breastfeeding during their hospital stay were documented. These included: mother's choice (24), mother's medical indication (6), mother's medical indication and mother's choice (3), infant placed in NICU (1), and no reason given (2). Upon admission, all 195 members of the population indicated that they would breastfeed exclusively, but only 159 (81.5%) were still exclusively breastfeeding at discharge; the other 36 (18.5%) gave their infants supplement during the hospitalization. The percentage of mothers who chose to continue breastfeeding following discharge (81.5%) is higher than the national average of mother's who exclusively breastfeed

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through the first week of their infant’s life (61.1%), and it is also lower than the national average of mother’s who never initiate breastfeeding (79%). A chi-square goodness of fit test was conducted to determine whether an equal number of participants (breastfeeding or not breastfeeding at the time of discharge) were recruited to the study. The minimum expected frequency was 97.5. The chi-square goodness of fit test indicated that mother’s choosing to breastfeed and the number of mothers choosing not to breastfeed at discharge was statistically significantly different ( $X^2(1) = 77.585, p < 0.00$ ), as 81.5% of the population was breastfeeding exclusively at discharge. This data is presented in Table 2, Table 3, and Figure 1.

**Table 2. Exclusive Breastfeeding At Discharge**

ExculsiveDC			
	Observed N	Expected N	Residual
No	36	78.0	-42.0
Yes	159	117.0	42.0
Total	195		

Table 2. Numbers of mothers whom exclusively breastfeed at discharge. A total of 195 women were included in the study due to their indication upon admission that they would exclusively breastfeed. 159 of the mothers were exclusively breastfeeding at discharge, and 36 of the mothers supplemented their infant. This chart illustrates that the expected frequency is 117 for the exclusive group if the null hypothesis is true. The residual column shows the difference between the observed column and expected column and indicates, “fit”.

**Table 3**

Test Statistics	
	ExculsiveDC
Chi-Square	37.692 <sup>a</sup>
Df	1
Asymp. Sig.	.000

0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 78.0.  
 Table 3. Chi-square goodness of fit test results ( $X^2(1) = 37.692, p < 0.00$ ), indicating a statistically significant finding.

**Figure 1. Exclusive Breastfeeding At Discharge**

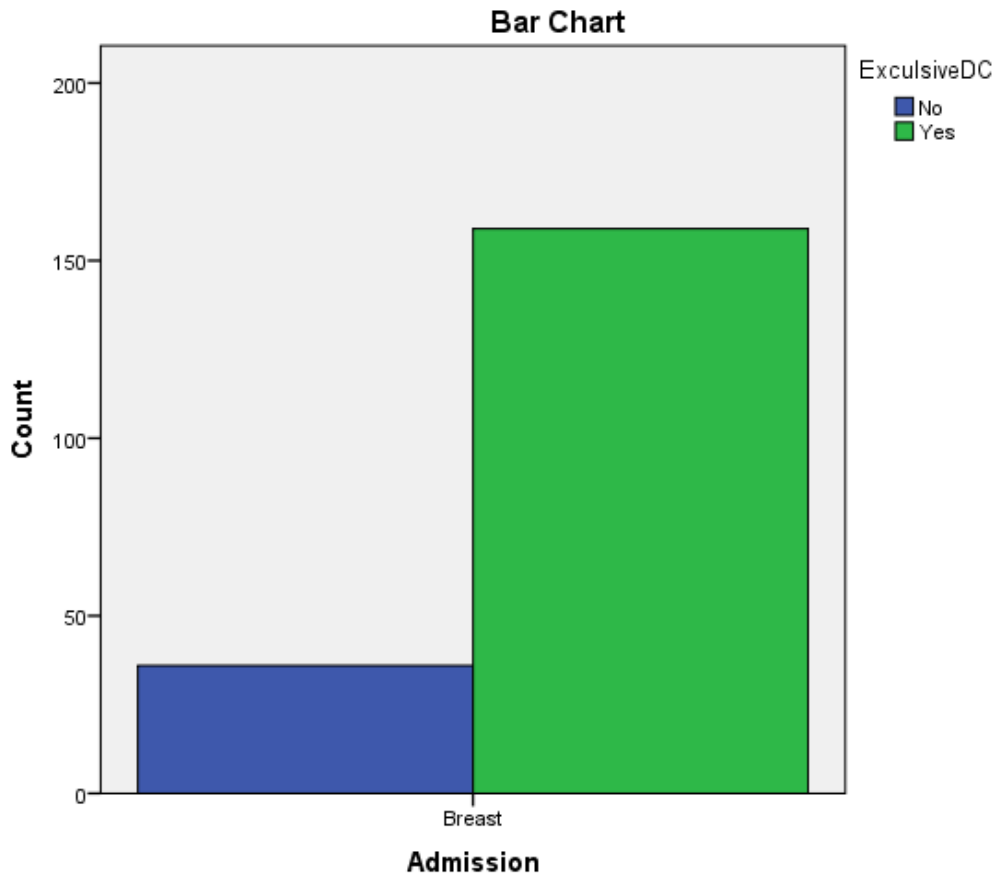


Figure 1. A total of 195 women indicated they would exclusively breastfeed. This graph shows the number of women who were actually exclusive at discharge and the number of women who supplemented their infant.

In addition, the number of women who supplemented pre- versus post-breastfeeding intervention was examined. A Spearman rank-order correlation was conducted to calculate a coefficient,  $r_s$ , in order to measure the strength of the association between the two continuous variables (number of times infants were supplemented pre- and post-teaching intervention). There is a strong positive correlation between number of times the infant was supplemented prior to teaching

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and the number of times the infant was supplement after teaching,  $r_s = .564$ ,  $p < .0005$ . This information was documented and is presented in Table 4, Figures 2, and Figure 3.

**Table 4. Correlations**

			SupplPteach	SupplAteach
Spearman's rho	Supplements before teaching	Correlation Coefficient	1.000	.564**
		Sig. (2-tailed)	.	.000
	Supplements after teaching	Correlation Coefficient	.564**	1.000
		Sig. (2-tailed)	.000	.
	N		208	208
	N		208	208

Table 4. This shows the association between the number of times the infant was supplemented pre- versus post-breastfeeding intervention. The correlation coefficient is a positive number, indicating a positive correlation. The two-tailed significance level (p-value) was  $< .0005$ . This indicates that there is a significantly different correlation between the two coefficients.

**Figure 2. Supplementation Pre- Breastfeeding Intervention**

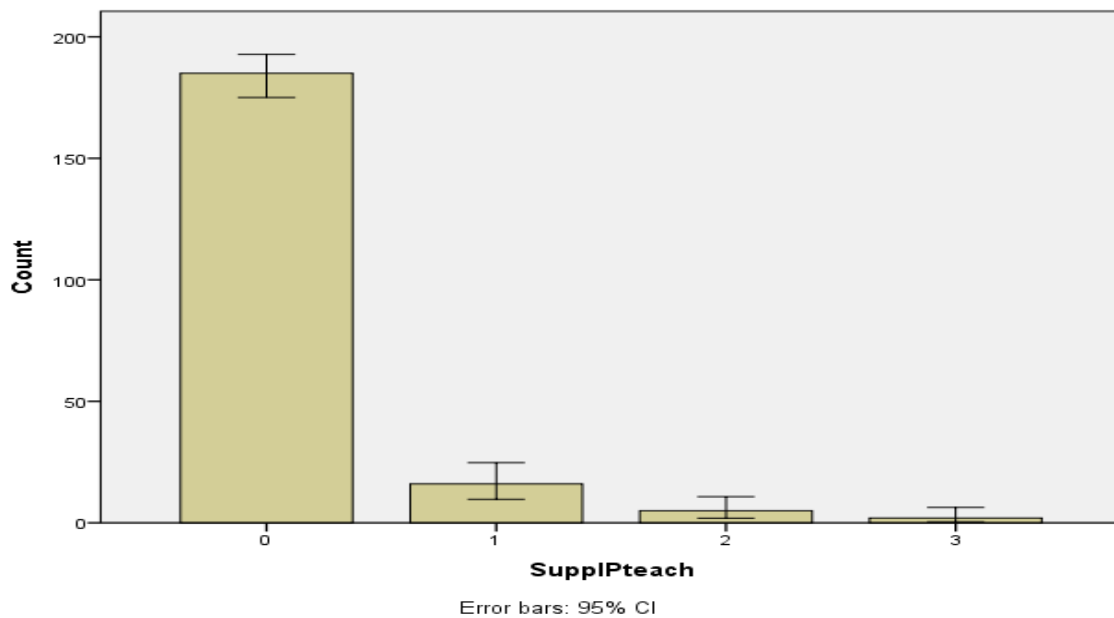


Figure 2. This illustrates the number of infants who were supplemented 0, 1, 2, and 3 times prior to the breastfeeding intervention.

**Figure 3. Supplementation Post- Breastfeeding Intervention**

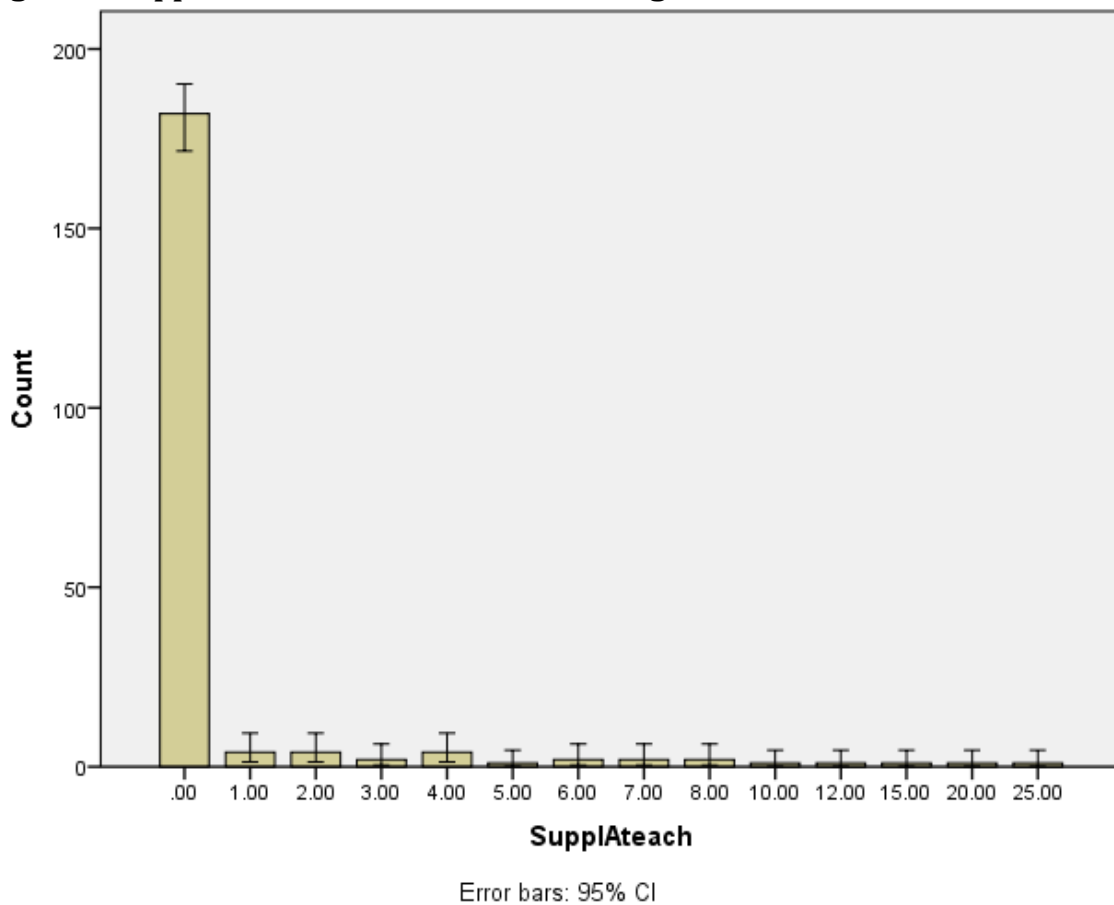


Figure 3. This illustrates the number of infants who were supplemented 0, 1, 2...25 times after the breastfeeding intervention.

**Discussion:**

The results of this study indicated that the breastfeeding intervention implemented in the Labor and Delivery Unit at Washington Regional Medical Center was effective in impacting the rates of exclusive breastfeeding among the women who originally stated that they would exclusively breastfeed. Of the total 195 women who were included in the study, 159 women (81.5%) were exclusive through discharge. This percentage is greater than the initially expected number of mothers who would exclusively breastfeed (Table 2). These findings were consistent with previously reviewed literature in that breastfeeding education and

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intervention implemented by a lactation consultant or other healthcare personnel increases the rates of exclusive breastfeeding. The teaching and support provided during the breastfeeding intervention gives the mother the confidence and knowledge needed to initiate and continue breastfeeding through discharge. The documented reasons that the other 36 women deviated from exclusive breastfeeding were also supported in the previously reviewed research. Medical indication, infant placement in the NICU, and mother's choice were all findings that resulted in mother's supplementing their infant. Other demographics, such as type of delivery and gestational age were documented, but the significance of these findings was not examined in this study.

The results also showed that among the women who deviated from exclusively breastfeeding, the number of times their infant was supplemented prior to breastfeeding intervention was positively correlated with the number of times the infant was supplemented after breastfeeding intervention. This would indicate that out of the sample of women who did deviate from exclusive breastfeeding the breastfeeding intervention was not effective. This specific data did not reflect the findings from previously reviewed research in that the teaching provided did not decrease the number of times the infant was supplemented post- intervention. Instead, there was an overall increase in supplements provided post- intervention when there was an increase in supplements provided pre- intervention. This may be due to a late onset in teaching and support provided by the lactation consultant or simply a result of mother's change in decision. Research shows that prenatal education that continues through the postpartum period allows the mother the

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knowledge base to initiate breastfeeding and provides the continued support to continue breastfeeding when barriers are faced. This sample of 35 women may not have been exposed to education prior to their infant's birth, resulting in a less confident decision regarding infant nutrition and an increased likelihood of deviating from exclusive breastfeeding. The need for consistent and continuous breastfeeding support is emphasized here.

Limitations to this study were identified. First, the population sample was small and the duration of time the data was collected was short. Second, there was no regulation in the actual education provided during each intervention; the education was based on client need, client report, and client performance. Lastly, this study did not examine individual demographic characteristics such as age, ethnicity, maternal employment or socioeconomic status that could alter the decision to breastfeed exclusively.

Future studies might explore the impact that type of birth or gestational age has on the practice of exclusive breastfeeding. They might also look at the effects that the mother's ethnicity, age, employment status, level of education, or socioeconomic status has on the decision to breastfeed. This could provide guidance on the education provided to the mother's falling into each category.

### **Conclusion:**

The findings provided by this study highlight the importance of consistent and continuous breastfeeding education and support beginning in the prenatal period and going throughout the postpartum period. They recognize the



effectiveness of the teaching provided by the lactation consultant and healthcare personnel at Washington Regional Medical Center but also identify areas of growth. For example, early onset of the breastfeeding education could have altered the number of times a mother supplemented her infant before and after intervention. Overall, the study reiterates the need for increased breastfeeding knowledge among all women and the significance of promoting breastfeeding and providing the necessary resources for women during this vulnerable, yet crucial, time period.

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