Evaluation of Breastfeeding Interventions to Improve Duration in Women at risk for Breastfeeding Attrition

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INTRODUCTION

Optimal breastfeeding is defined as exclusively breastfeeding infants' the first six months followed by the introduction of food with continue breastfeeding for two years (WHO, 2017). Children that are optimally breastfed have the healthiest start in life (UNICEF, 2016), therefore, the World Health Organization and the CDC recommends that mothers optimally breastfeed. Benefits to children include the receipt of antibodies, reduction of ear, respiratory, and gastrointestinal infections, decreased sudden infant death syndrome, allergies, diabetes, and childhood leukemia. Several research studies have reported a strong positive correlation between breastfeeding and reduced infant morbidity and mortality (Gabbe, et al., 2017; Khan, Vesel, Bahl, & Martines, 2015; Rollins et al. 2016; Victora et al. 2016). Optimal breastfeeding practice could help prevent 823,000 child deaths and 20,000 maternal deaths from breast cancer per year worldwide (Rollins et al. 2016; Victora et al. 2016; Khan et al., 2015). Research also supports extension of benefits of breastfeeding to the mother which include reduction of uterine bleeding in the immediate post-partum period and early uterine involution, reduction of depressive symptoms, (Figueiredo, Canário, & Field, 2014), reduced risk of breast, endometrial, and ovarian cancers (Su, Pasalich, Lee, & Binns, 2013). In addition, Gunderson, et al. (2015) noted a relationship between longer breastfeeding duration and lower incidence of developing diabetes mellitus in women that had gestational diabetes while pregnant when compared to women with similar diagnosis that only bottle-fed. Evidence illustrates that the health benefits from breastfeeding are dose dependent, thus the longer the breastfeeding duration the greater the acquisition of the enumerated benefits (Miller, Miller, Taylor, & Way, 2017). Economically there is a burden when women do not optimally breastfeed. Globally, not breastfeeding or premature cessation of breastfeeding is estimated to result in economic losses of about $302 billion annually (0.49 %) of the world gross national income from lost productivity and health care costs to treat preventable illnesses and chronic diseases. (Victora et al. 2016). There are advances in breastfeeding initiation in some parts of the world including the United States but there still exists a significant gap between initiation and breastfeeding maintenance for optimal health of the society (CDC, 2018). Early cessation of breastfeeding less than the WHO recommended duration is prevalent. Worldwide, only 40% of children are exclusively breastfed for the first six months of life. This is less than the target of at least 50% by the year 2025 set by WHO (2014). Twenty five percent of mothers in the United States exclusively breastfed at six months. In the state of Georgia, 22.1% exclusively breastfed up to six months which is less than the goal set by the U.S. Department of Health and Human Services (DHHS) through the Healthy People 2020 initiative (CDC, 2018). The U.S. Preventive Services Task Force recognized that the provision of support both prenatally and post-partum is one of the best ways to improve breastfeeding duration (Department of Health and Human Services, 2011). The purpose of this project was to identify women at risk for early breastfeeding cessation at a midwifery practice, supplement this group with multiple forms of support to help promote the WHO's goal of optimal breastfeeding so the long-term health sequalae related to breastfeeding may be experienced.

METHODOLOGY

Overview of the study: This quality improvement project was conducted in southeast Georgia in the USA. The participants were screened for risk of breastfeeding attrition. Those identified to be at high risk for breastfeeding were supplemented with further breastfeeding education during the third trimester of pregnancy. The prenatal education curriculum focused on the importance/benefits of breastfeeding, importance of early breastfeeding initiation and following the ten steps of the baby friendly initiatives to enhance breastmilk production and sustain duration. This group after birth, received postpartum support within 24 hours after giving birth from lactation consultants and were referred to community breastfeeding support upon discharge from the hospital. In addition, they received telephone support at one week postpartum. Those not at risk received routine care which included some breastfeeding education and literature and a routine lactational support visit postpartum. The project goal was to determine if multiple modalities of support may increase rates of breastfeeding for women at risk for breastfeeding cessation.

1. The population for this project were women, 34-36 pregnant, aged 18-45 years with a singleton pregnancy, receiving prenatal care from a midwifery practice with plans to deliver at the hospital affiliated to the practice. The participants were recruited by convenience sample during scheduled prenatal visit. Sixty-two participants were approached and 56 consented.

Data Collection: At the beginning of the project, IRB approval and consents were obtained from the Midwifery office, its affiliated hospital, and Georgia College and State University. Data was collected at four intervals: twice during the third trimester from 34-36 weeks of pregnancy then one week and six weeks postpartum. Data collected included the demographic questionnaire, the modified breastfeeding prediction attrition tool (BAPT) and the Prenatal breastfeeding self-efficacy (PBSES) tool. At 34-36 weeks all women meeting inclusion criteria were approached and consented. They filled out a demographic and BAPT survey. From the BAPT survey score the potential for breastfeeding attrition risk was determined. Participants at-risk for breastfeeding attrition were given additional breastfeeding education at their next prenatal visit. After the additional breastfeeding education, the at-risk women completed a second Prenatal breastfeeding self-efficacy survey. The lactation consultants provided lactation support to the at-risk participants within 24 hours after delivery and gave them the local breastfeeding community resources at discharge. The at-risk participants were referred to the WIC program after discharge, if eligible, for community support by peer counselors. Those that were not eligible for WIC were referred to the hospital outpatient breastfeeding support services. The participants at risk for breastfeeding attrition completed a telephone survey and received telephone breastfeeding support one week after delivery. All participants were seen approximately six weeks after delivery. At this visit, women were asked to complete a survey regarding their present mode of infant feeding. Those that did not come for their appointment at six weeks completed the survey via telephone. All tools and educational materials were available in the English and Spanish languages.

Statistical Analysis: All the variables were examined for evidence of normal distribution. Maternal age was the only variable determined to be normally distributed. As such, the nonparametric tests Mann Whitney U and Wilcoxon Signed Ranks were selected for statistical analysis. Bivariate analysis for relationships were examined with the Spearman Rho test. Descriptive statistics were obtained to describe the characteristics of the participants for key variables. This was followed by inferential statistics of the categorical and non-categorical variables. All study participants in the not at-risk group provided complete data. Data was missing for two subjects in the at-risk group from the telephone survey because they could not be contacted by the phone number provided. Data was also missing for one subject from the postpartum survey due to a neonatal death, so they were not included in postpartum analysis but their response for other parts of the project was retained. The Statistical significance was set at $p < 0.05$. Data analysis was performed using SPSS (Statistical Package for the Social Sciences) version 24.

RESULTS

Sixty-four eligible candidates were approached, 56 consented to participate: the at-risk group (n =21) and not at-risk group (n = 35). Table 1. presents descriptive statistics of baseline characteristics for the participants. The participants in both groups ranged from 18 years to 40 years (M = 29, SD =28.57). Majority of the participants were Hispanics (42%). Analyses was restricted to African American, Caucasian, and Hispanics due to relatively small Asian group (n = 1). Majority of the participants completed high school (42%). Likewise, more than half were unemployed (60%), single (54 %) and had more than one child (72%). Fifty percent of the women planned to breastfeed exclusively. The participants BAPT scores ranged from 12-34, (M = 24.75, SD = 5.67), 37.5% of the participants (n =21) were identified as at risk for attrition. The at risk group had BAPT scores that ranged from 12 to 19.5 and a mean score of 18.29 (SD = 2.04), while the not at risk group had scores that ranged from 21-34 and a mean score of 28.24 (SD= 3.38).

Table 1.

Characteristics of all participants.

Demographic/Breastfeeding Variable	Frequency %	M (SD)
Age		**28.57 (5.92)**
Race		
African American	10 (17.9)	
Asian	1 (1.8)	
Caucasian	21 (37.5)	
Hispanic	24 (42.9)	
Education Level Completed		
Less than High School	5 (8.9)	
High School	23 (41.0)	
College/Technical school attempt	17 (30.4)	
Associate Degree	4 (7.1)	
Bachelor's Degree	2 (3.6)	
Master's Degree	3 (5.4)	
Doctorate Degree	2 (3.6)	
Employment		
Yes	22 (39.3)	
No	34 (60.7)	
Marital Status		
Married	26 (46.4)	
Single	30 (53.6)	
Breastfeeding Factors		
Parity		
Primipara	16 (28.6)	
Multipara	40 (71.4)	
Number of Children	1 (1.87)	
Previous Breastfeeding Experience		
Yes	36 (64.3)	
No	20 (35.7)	
Breast Surgery		
Yes	2 (3.6)	
No	54 (96.4)	
Prenatal Intention to Breastfeed		
Yes	55 (98.2)	
No	1 (1.8)	
Feeding Choice Confidence	**7 (1.52)**	
Past Breastfeeding Problems		
Yes	8 (22.2)	
No	28 (77.8)	
Plan for Feeding Baby		
Breast Only	28 (50)	
Breast and Bottle	25 (25)	
Bottle Only	0	
Unsure	3 (5.4)	

Note M=Mean, SD = standard diviation

Table 2.

Mann Whitney U test. (Ranks) on Breastfeeding at 6 weeks in both groups

Variable	Study Groups	N	Mean Rank	Sum of Ranks
Breastfeeding at 6-weeks	At-Risk group	20	34.33	721.00
Postpartum	Not At-Rick group	35	25.00	875.00

Mann-Whitney test of statistics on breastfeeding duration at 6 weeks

Mann-Whitney U	245.000
Wilcoxon W	875.000
Z	-2.703
Asymp. Sig. (2-tailed)	.007*

*Note *Significance set at ≤ 0.05*

Table 3.

Comparison of PBSES scores in the At-Risk group pre/post education

Variables	N	Mean	Std. Deviation	Range Minimum	Range Maximum
Total first PBSES score	21	71.5714	21.18861	20.00	97.00
Total second PBSES score	21	82.5714	14.52781	50.00	100.00

Note N = number of participants

Wilcoxon Rank Test statistics of PBSES scores

	Pre/Post PBSES score
Z	*-3.923[b]*
Asymp. Sig. (2 tailed)	*0.00**

*Note * significance set at p ≤0.05, b. Based on negative ranks*

DISCUSSION

The women in the at-risk for breastfeeding cessation were more likely to not have a college education and had higher number of children. Spearman correlation showed a weak relationship between being at risk for attrition by low BAPT score and demographic variables of age, education, ethnicity, past breastfeeding experience and gravida status. This result was in contrast to other studies that have evaluated relationship between demographic variables and early breastfeeding cessation. Goncalves (2017), examined the relationship between socioeconomic, demographic, family-related, pregnancy and birth factors, and bottle feeding/early breastfeeding cessation in the United Kingdom. The results demonstrated that early breastfeeding cessation was strongly associated with age, marital status, race, education employment, and number of children. Younger white women that were single, with less education had more children and worked, were significantly associated with early breastfeeding cessation. This result could be due to dissimilarities' in education, gravida, parity and sample size seen in this study. This project had more Hispanic participants while the Goncalves (2017) study likewise other studies that have examined this phenomenon had predominantly Caucasian, Middle eastern and African American participants. As such this might be a characteristic more commonly seen in the African Americans and Caucasians than in the Hispanic ethnicity.

The proportion of participants that breastfed at six weeks in the at-risk group was 52% and 85% in the not at-risk group. Test for significance was completed using the Mann Whitney U Test displayed in Table 2. The breastfeeding rate at 6 weeks in the at-risk group differs significantly

from the rate in the not at-risk group. In contrast, a study by Thomson et al. (2017) found that increased knowledge and addressing barriers for breastfeeding were insufficient to empower women to continue breastfeeding their infants. Of note, that study primarily focused on African Americans that resided in the southern states of the nation as the participants. While the geographical locations are similar the participants in this study were diverse and included more Hispanics and Caucasians than African Americans.

The Wilcoxon Signed Ranks Test detailed in table 3. was used to compare the pre and post PBSES scores collected. Prenatal breastfeeding self-efficacy scores were significantly greater after the breastfeeding education intervention than before the intervention. However, there was no correlation between breastfeeding duration at six weeks and the PBSES scores when compared. In a study by Pineiro-Albero, et al. (2013), where the PBSES tool was used with larger sample size (n = 234) and three groups. There was an association between the PBSES score and breastfeeding duration. The PBSES score also strongly predicted exclusive breastfeeding at discharge for that study. In this project, there was no association between the PBSES and breastfeeding duration. The reason for no association between the breastfeeding scores and breastfeeding duration at six weeks may be due to the small sample size of this project. Pineiro-Albero et al. (2013) sample included only Hispanic women while this project has diverse ethnicity. Also, the reason for not seen any association between the PBSES scores and breastfeeding may be due to difference in the curricula of the breastfeeding education provided. The Pineiro-Albero et al. (2013) education curriculum was specific for self-efficacy attrition only. However, the education provided to the at-risk group for this project had a broader focus on knowledge of breastfeeding health benefits, the Baby Friendly hospital characteristics, what to expect when in hospital, self-efficacy, and support.

Limitations of the project were identified. All participants in the project were from a suburban to rural areas in the southeastern United States. The sample although diverse was small and included convenience sampling of subjects that presented for care during recruitment for this project making transferability to other population limited. The effect size may be less modest due to the small sample, and similarly the at-risk group was smaller than the not at-risk which may have affected the results obtained from statistical analysis. Another limitation to consider was the timing of this project. This project recruitment occurred during the 3rd trimester. Most studies with a prenatal component started enrollment in the first trimester when mothers have not decided on how to feed their baby than during the third trimester when decision about feeding choice had already occurred. Also, the women in the third trimester are more focused on delivery expectations and may not have had enough time to process the information provided.

Empirical evidence suggests breastfeeding attrition is multifactorial. As such, addressing it demands a diverse approach. One approach is to screen women for attrition risk during the prenatal period. Identification of women most likely to stop breastfeeding during the prenatal period is the first step in solving this problem. This is also relevant in women that intend to breastfeed. The project indicates that the BAPT can serve as a valid tool to use prenatally in screening for attrition in this population. This proposes that prenatal care practitioners adopt the practice of routinely screen for breastfeeding attrition prenatally using a valid tool. Immediate effective postpartum support is crucial to the initiation and continuation of breastfeeding (Chaput et al., 2015). Studies have shown that lactation nurses and consultants are best prepared to advance breastfeeding duration (Wambach et al., 2011). This advocates that hospitals recognize the benefits and cost effectiveness of supporting breastfeeding and should explore alternative ways to meet the postpartum breastfeeding support needs of the clients. Educating and cross training nurses to give breastfeeding support is a potential solution to be considered in postpartum units. Lastly, the decision made prenatally to breastfeed had a strong positive association with breastfeeding duration in both groups. The prenatal period should be used to empower women, provide the support and education that will help them make this choice early in the pregnancy.

The findings from this project brought up questions that can be appraised with future research. There is a need to implement a self-efficacy focused breastfeeding education and evaluate its impact on maternal perception of milk supply and breastfeeding duration In addition, a need exists to further study the variables that might contribute to breastfeeding attrition in each ethnicity in this population. A replication of this study with randomized sampling will aid in in a cause and effect application of the results. Also, evaluation of clinical interventions such as targeted education for each subset of the BAPT which can be implemented by prenatal care providers to increase breastfeeding duration.

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