

**Increasing breastfeeding duration and exclusivity in a sample of rural women: A pilot study**Joanne Chopak-Foss, PhD, FASHA<sup>1</sup> and Felicia Yeboah, MHA<sup>2</sup><sup>1</sup>Department of Community Health Behavior & Education, Jiann-Ping Hsu College of Public Health, Georgia Southern University, Statesboro, GA; <sup>2</sup>Department of Epidemiology, Jiann-Ping Hsu College of Public Health, Georgia Southern University, Statesboro, GA**Corresponding Author:** Joanne Chopak-Foss • P.O. Box 8015, JPHCOPH, Statesboro, GA 30460 • (912-478-1530 • [jchopak@georgiasouthern.edu](mailto:jchopak@georgiasouthern.edu))**ABSTRACT****Background:** Increasing breastfeeding exclusivity and duration is an objective of Maternal and Child Health (MICH-21.4 and 21.5) of the Healthy People 2020 initiative. Breastfeeding rates differ considerably between high-income and low-income women.**Methods:** This was a pilot project conducted to assess the feasibility of an intervention to increase breastfeeding practices overall and to improve exclusive breastfeeding rates among a sample of rural women enrolled in the Special, Supplemental Nutrition Program for Women, Infants and Children (WIC) in a rural Georgia county. Participants were recruited from the local regional hospital (n=27). Support group meetings were offered over a four-week period and began within five days of birth. At each meeting, data were gathered on demographic characteristics, pacifier use, initiation of cup feeding, and rates of breastfeeding duration and exclusivity.**Results:** More than 60% of the participants breastfed exclusively for the first week, but by the end of the fourth week, that number dropped to under 45%.**Conclusions:** Low-income women continue to be among the most challenging group in which to improve breastfeeding duration and exclusivity rates. Public health programs need to create innovative ways in which to improve breastfeeding rates. Lessons learned from the pilot study are described and suggestions for future study are provided.**Key words:** breastfeeding, duration, exclusivity, low-income women, rural health<https://doi.org/10.21633/jgpha.6.305>**INTRODUCTION**

Although many low-income mothers recognize some of the nutritional, psychosocial, and health benefits for the infant via breastfeeding, these benefits are not always internalized. Breastfeeding is particularly important for both low-income women and their infants because they have the lowest reported rates of breastfeeding initiation and duration (Murimi, Dodge, Pope & Erickson, 2010; Murimi, Dodge, Pope & Erickson, 2016; Petrova, Ayers, Stechna, Gerling, & Mehta, 2009) and are more likely to receive benefits from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

For many women, regardless of income, returning to school or work presents challenges, and is often cited as a barrier to begin or continue breastfeeding. For example, half of all mothers returning to work or school reported problems in continuing breastfeeding, and they were more likely to discontinue breastfeeding by 3 months (Taveras et al., 2003). Flower and colleagues (2008) identified an interaction between return to work and WIC participation as associated with decreased breastfeeding initiation and continuation, suggesting that mothers and members of their social support network assume that women's work and breastfeeding are

not compatible. Practical challenges to breastfeeding, despite WIC education and counseling, may present larger barriers and require fewer traditional solutions to increase rates of breastfeeding duration and exclusivity.

Although barriers to breastfeeding, such as returning to work, have been reported (Flower, Willoughby, Cadigan, Perrin & Randolph, 2008), there are issues specifically affecting low-income women living in rural communities. Low-income rural women are more likely to have poor lifestyle behaviors (i.e., use of tobacco, alcohol, inadequate physical activity, and poor nutrition) and they also often comprise most of the workforce in small businesses (e.g., those with fewer than 50 employees), where their workplaces do not have resources to support breastfeeding mothers, including understanding of federal regulations and the willingness of employers to support opportunities to express milk (Majee, Jefferson, Goodman & Olsberg, 2016).

The 2016 Breastfeeding Report Card by the CDC indicates that the state of Georgia falls below the U.S. national average for breastfeeding by nearly 10%. Georgia is ranked 40th out of 51 states that were listed on the report card. Specifically, 69.2% of infants in Georgia were ever breastfed; the national average was 81.1% for the same

category. The report further asserts that infants in Georgia who were breastfed up to 6 months in 2011 was 40.1%; the U.S. national average was 49.4%. There was a decrease in breastfeeding rates as infants aged, both in the U.S. national average and in Georgia. Breastfeeding at 12 months decreased to 20.7% in Georgia; the U.S. average decreased to 26.7%. In Georgia, exclusive breastfeeding at three months and at six months was 27.2% and 14.5%, respectively, as compared to 40.7% and 18.8% for the national average (CDC, 2016).

Furthermore, a comparison of breastfeeding rates in other southern states indicates that Texas, North Carolina, Florida, Tennessee, and South Carolina had higher rates than Georgia for infants ever breastfed. The percentage of infants who were ever breastfed was 78.4% in Texas; 77.2% in North Carolina; 77.0% in Florida; 74.9% in Tennessee; and 73.4% in South Carolina. The remaining southern states of Alabama, Arkansas, Kentucky, and Louisiana recorded the lowest rates of breastfeeding in all categories (CDC, 2016).

The impetus for this pilot study was the low rates of breastfeeding initiation, duration, and exclusivity in Georgia and specifically in one rural county in South Georgia. The county in which the pilot study was conducted has a population of 72,651, with 66.5 % of the residents being White, 29.4% Black American, and 4% Hispanic (Oasis, 2017). Many of the Hispanic population are seasonal, migrant farm workers. The county is home to a comprehensive, regional university with an enrollment of 21,000 students as well as a Technical College and several manufacturing facilities.

In the county, rates of breastfeeding initiation by WIC mothers remained almost level from fiscal year 2006 to 2010 (39.7%, 41.8%, 40.6%, 35.8%, and 39.5%, respectively), and only 18.4% of WIC mothers were breastfeeding at 6 months (Georgia Department of Human Resources, 2009), a value below the national average. By 12 months, only 13.8% of WIC participants were still breastfeeding, compared to 22.7% of non-WIC participants who reported breastfeeding in some form. Improving exclusivity rates are especially important because WIC is a supplemental nutrition program, and the amount of formula is reduced as the infant matures. Zioli-Guest and colleagues (2010) reported lower rates of breastfeeding for WIC participants who received benefits during the 1<sup>st</sup> and 2<sup>nd</sup> trimesters.

The purpose of the present study was to determine the feasibility and delivery of a breastfeeding intervention in a group of low-income women in a rural community in South Georgia with the goal of increasing exclusivity of breastfeeding for the first four weeks following birth. For the purposes of this study, as per the American Pediatrics Association (2012) recommendations on exclusive breastfeeding, it was operationalized that breastfeeding would include any and all use of breastmilk for infant

feeding, whether by breast or pump and without the introduction of formula for a minimum of 6 months.

## METHODS

### Participants

There were 27 participants in this pilot study. After considering various recruitment options (e.g., local WIC office, private doctor's offices), it was determined that the most practical and feasible method would be at the time of delivery when feeding options would be most relevant. Therefore, recruitment took place at the regional medical center. Participant eligibility was limited to only those women who were planning to breastfeed and who were Medicaid recipients. The project investigators met with the nurse administrator of the labor and delivery department of the medical center to gain access and permission to recruit participants, so as to be in compliance with HIPAA (The Health Insurance Portability and Accountability Act of 1996) regulations. Approval for the project was obtained from the university's Institutional Review Board. Participants received additional support for their breastfeeding through four weekly meetings during the first month following birth.

### Data Collection

Data were collected over a seven-month period from April-December 2008. Participants attended support group sessions once per week for four weeks. At each session, the newborn was weighed, and the breastfeeding follow-up record was examined. Questions included in the follow-up are addressed in the instrumentation section below.

In an effort to increase participant retention rates, several incentives were offered on completion of all four sessions and presented at the fourth and final session. The first incentive was an electric, double breast pump to be given to all participants. For the second incentive, names of participants were entered into a drawing for a \$50 gift card to Wal-Mart upon completion of the four sessions.

### Instrumentation

The demographic questions related to level of education, marital status, race, whether this was the first pregnancy and first birth, type of delivery, whether or not the woman had breastfed before, and type of social support, e.g., support from spouse for breastfeeding, no support from spouse/partner for breastfeeding, having to return to work, and use of a breast pump (Wolf, 2003; Majee et al., 2016). Additional items included pre-pregnancy weight and weight at delivery, baby's birthweight, and smoking behavior postpartum. Information on factors relevant to study outcomes was documented on the breastfeeding follow-up record card. These items included use of a pacifier at six different time intervals ranging from use in the hospital, then during weeks 1-5, then at three months and at six months cup feeding, and finally, whether the mother was experiencing any medical problems (that might impact breastfeeding exclusivity). Information on feeding practices

was documented by specific feeding categories: exclusive, almost exclusive, full breast milk feeding, partial feeding, and token feeding as established by the Interagency Group for Action on Breastfeeding (IGAB, 1997).

**Data Analysis**

The data were analyzed using SPSS (version 19). First, descriptive statistics were generated for demographic items, all of the weight variables, information on feeding practices, and pacifier use. Chi-square analyses were performed to assess the bivariate relationship between demographic variables and breastfeeding status. All tests were performed with  $\alpha = 0.05$  as the level of statistical significance.

that 22% were single, 48% were married, and one participant who was separated/divorced. The remaining 22% did not respond. Over 1/3 of this group (37%) reported attending some college, 13% completed college, and 30% did not report their level of education. Slightly over 40% of the sample was White/Caucasian (Table 1). The age of the participants ranged from 15-34, with the mean ( $X = 24.6$ ). Cross-tabulations, performed for level of education, race, and marital status by the variable of social support, did not demonstrate significant differences. Social factors such as returning to work, partner or family support, and attitudes toward breastfeeding support in the workplace were also not identified as barriers to breastfeeding.

**RESULTS**

Recruitment resulted in 27 women who agreed to participate in the study. Demographic data for the participants indicated

**Table 1. Demographic characteristics of participants**

Race	N=26	Marital Status	N=27	Level of Education	N=27
White	11	Single	6	Less than high school	1
Black	9	Married	13	High school diploma	2
Unknown	6	Separated	1	Some college	10
		Missing/Unknown	6	College	5
				Unknown/Did not report	8

Of the participants, 63 percent were breastfeeding exclusively for the first week, but, by week four, that number declined to 44%. By week seven, only one participant was breastfeeding exclusively. There was a sharp

drop-off between weeks four and five among those who were exclusively breastfeeding. The number of participants who stopped breastfeeding completely increased so that, by week five, 15% were not breastfeeding at all.

**Table 2. Frequencies for Breastfeeding Duration and Exclusivity**

	Week 1 N=26	Week 2 N=26	Week 3 N=26	Week 4 N=26	Week 5 N=23	Week 6 N=23	Week 7 N=20
Exclusive	17 (63%)	14 (52%)	11 (41%)	12 (44%)	7 (26%)	5 (19%)	1 (4%)
Almost exclusive	0	0	2 (7%)	0	1 (4%)	1 (4%)	0
High partial	3 (11%)	3 (11%)	3 (11%)	3 (11%)	1 (4%)	0	0
Medium partial	1 (4%)	0	1 (4%)	0	8 (27%)	0	0
Low partial	0	0	0	1 (4%)	0	1 (4%)	3 (11%)
Not breastfeeding	0	2 (7.4%)	2 (7%)	3 (4%)	4 (15%)	7 (26%)	6 (22%)
Unknown	5 (19%)	7 (26%)	7 (26%)	7 (26%)	8 (30%)	9 (39%)	10 (37%)

**DISCUSSION**

The purpose of this pilot study was to determine the feasibility and delivery of a breastfeeding intervention to a group of low-income women in a rural community in South Georgia with the purpose of increasing exclusivity of breastfeeding for the first four weeks following birth.

For the participants, breastfeeding exclusivity was high following birth, but then began to decline rapidly. The small sample size precluded making inferences on the importance of social support, including support from spouse/partner and/or support from other family members in maintaining exclusivity. In addition, factors such as having to return to work were not measured. Social factors that have previously

been identified as barriers to breastfeeding for low-income women (Flower et al., 2008) were not significant for the participants. One reason may be due to the small sample size. However, issues such as race and education level were not significantly related to exclusivity or duration of breastfeeding.

Lessons were learned from this pilot study. The feasibility of working with the target population (low-income women) proved to be challenging for a variety of reasons. Gathering follow-up data on study participants was difficult, as many did not have working modes of communication. Several of the participants mentioned transportation as a recurrent issue affecting attendance at the sessions, since some of the women had to rely on others for rides to the location of the

education sessions. This affected delivery of tips for extending duration and maintaining exclusivity. Many women had other young children and, although they were encouraged to bring them along, they did not. Despite efforts to translate consent forms and other materials into Spanish, language remained a barrier. Recruitment of Hispanic/Latino women was difficult. Lack of a native speaker to reduce translation issues and build trust was an important lesson. The fact that participants were required to attend four weekly sessions for the first month following the birth of their child may have been overwhelming. However, this study shed light on an often unrepresented rural population in breastfeeding interventions.

The results of the study indicated that continued efforts at increasing duration and exclusivity among low-income women in rural communities is warranted. Among women of color, African American women are among the lowest to report ever breastfeeding; Hispanic/Latino women are among the highest. Values for White, non-Hispanic/Latino women are in the middle, above average, but lower than those for Latino women (Bartick et al., 2016). Thus, interventions targeting African-American and White, non-Hispanic/Latino women are relevant. For the participants, week four of the intervention showed a large drop-off in breastfeeding, suggesting that efforts to continue to breastfeed exclusively should be increased during this time interval. Furthermore, hospital staff should be trained or re-trained in cultural competency so that they may assist low-income women to choose breastfeeding. Including bi-lingual healthcare personnel, so that the barriers of communication, specifically in communities that have a high population of migrant farm workers, is appropriate. Improving self-efficacy among low-income women in regard to the barriers to breastfeeding is also suggested. Lastly, since most participants were married, education measures should also aim at addressing the beliefs of the fathers and involve them in postpartum breastfeeding efforts.

### Implications for Public Health Practice

Health professionals have the opportunity to provide guidance and encouragement, which may provide support during the breastfeeding experience. Two goals for improvement in Georgia are decreased infant mortality and optimum infant health. Increasing the number of women who choose to breastfeed can contribute to the achievement of these goals. Low-income women often experience a lack of continuity of care and personal involvement from the health care provider, although many trust the personalized counseling they receive at WIC (Cricco-Lizza, 2006). WIC has been associated with various interventions to increase rates of breastfeeding initiation, duration, and exclusivity. Interventions with a focus on breastfeeding rates have taken the form of peer counseling (Lovera, Sanderson, Bogle, & Acosta, 2010), increasing access to a lactation consultant (Lukac, Riley, & Humphrey, 2006; Betzold, Laughlin, & Shi, 2007; Bonuck et al., 2005; Petrova, Ayers, Stechna, Gerling, & Mehta, 2009) or a trained counselor (Finch & Daniel, 2002), support groups (Bosnjack, Grguric,

Stanojevic, & Sonicki, 2009), telephone support (Bunik et al., 2010), and primary care-based initiatives (Labarere et al., 2005; Chung, Raman, Trikalinos, Lau, & Ip, 2008). The present study underscores the difficulty of reaching rural, low-income women who are WIC participants. This issue should be addressed when designing interventions.

Reducing barriers to breastfeeding may assist policy makers and public health practitioners in developing programs for low breastfeeding populations that would be in line with recommendations for infant feeding practices targeted by Healthy People 2020.

### CONCLUSIONS

Results of this study suggest that, despite targeting a rural population of low-income women is challenging because they report the lowest rates of breastfeeding, it is important that they remain a targeted population. Suggestions for future research are to refine the study to include a “pre-recruiting” questionnaire that uses a theoretical framework such as the Theory of Planned Behavior (Ajzen, 1985) or the Health Belief Model (Janz & Becker, 1984) that would assess the likelihood of breastfeeding and barriers to breastfeeding so as to develop appropriate strategies for reducing the barriers to continuing to breastfeed following hospital discharge. A challenge in rural communities is lack of public transportation, which hinders attendance at support group meetings. To address this challenge, public health educators can partner with the local health department to provide transportation. Including measures of self-efficacy with regard to breastfeeding exclusivity and duration should be included to identify barriers to continuing to breastfeed, as personality is often associated with women’s decision to initiate and continue breastfeeding (Avery, Zimmermann, Underwood & Magnus, 2009; Wagner et. al, 2006). Furthermore, continuing to target young, low-income women living in rural communities will help to establish the choice to breastfeed as the norm, rather than the exception. Future interventions should include a qualitative measure to ascertain why four weeks postpartum may be a relevant milestone.

### Acknowledgements

The authors would like to acknowledge the contributions of Padmini Shankar, Ph.D., R.D., Diana Sturges, M.D., MA, and Rebecca Black, M.S.R.D., College of Health & Human Sciences, Georgia Southern University for their contributions to the study and Yelena Tarasenko, DrPH, MPH, MPA, JD, Jiann-Ping Hsu College of Public Health for her contributions to the manuscript.

### References

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg: Springer.
- American Pediatrics Association Policy (2012). <http://www.pediatrics.org/cgi/doi/10.1542/peds.2011-3552>
- Avery, A., Zimmermann, K., Underwood, P. W., & Magnus, J. H. (2009). Confidence commitment is a key factor for sustained breastfeeding. *Birth*, 36(2), 141-148.

- Bartick, M.C., Jegier, B.J., Green, B.D, Bimla Schwarz, E., Reinhold, A.G., & Stuebe, A.M. (2016). Disparities in breastfeeding: Impact on maternal and child health outcomes and costs. <http://dx.doi.org/10.1016/j.jpeds.2016.10.028>
- Betzold, C. M., Laughlin, K. M., & Shi, C. (2007). A family practice breastfeeding education pilot program: An observational, descriptive study. *International Breastfeeding Journal*, 2, 4.
- Bonuck, K. A., Trombley, M., Freeman, K., & McKee, D. Randomized, Controlled Trial of a Prenatal and Postnatal Lactation Consultant Intervention on Duration and Intensity of Breastfeeding up to 12 Months. (2005). *Pediatrics*, 116, 1413-1426.
- Bosnjak, A. P., Grguric, J., Stanojevic, M., & Sonicki, Z. Influence of Sociodemographic and Psychosocial Characteristics on Breastfeeding Duration of Mothers Attending Breastfeeding Support Groups. (2009). *Journal of Perinatal Medicine*, 37, 185-192.
- Bunik, M., Shobe, P., O'Connor, M. E., Beaty, B., Langendoerfer, S., Crane, L., & Kempe, A. (2010). Are 2 weeks of daily breastfeeding support insufficient to overcome the influences of formula? *Academic Pediatrics*, 10, 21-28.
- Centers for Disease Control and Prevention (2016). Breastfeeding Report Card, United States: Outcome Indicators [Data file]. Retrieved from <https://www.cdc.gov/breastfeeding/pdf/2016breastfeedingreportcard.pdf>
- Chung, M., Raman, G., Trikalinos, T., Lau, J., & Ip, S. (2008). Interventions in primary care to promote breastfeeding: An evidence review for the U.S. preventive services task force. *Annals of Internal Medicine*, 149, 565-582.
- Cricco-Lizza, R. (2006). Black Non-Hispanic mothers' perceptions about the promotion of infant-feeding methods by nurses and physicians. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 35, 173-180.
- Finch, C., & Daniel, E. L. (2002). Breastfeeding education program with incentives increases exclusive breastfeeding among urban WIC participants. *Journal of the American Dietetic Association*, 102(7), 981-984.
- Flower, K. B., Willoughby, M., Cadigan, R. J., Perrin, E. M., Randolph, G., & The Family Life Project Investigative Team (2008). Understanding breastfeeding initiation and continuation in rural communities: A combined qualitative/quantitative approach. *Maternal & Child Health Journal*, 12, 402-414.
- Georgia Department of Human Resources, Division of Public Health, Southeast Health District. (2009). Southeast health district annual report FY 2009. Waycross, GA.
- Georgia Department of Public Health retrieved June 10, 2012 <http://health.state.ga.us/pdfs/familyhealth/nutrition/ga-dhr-postion-paper.pdf>
- Interagency Group on Breastfeeding Monitoring (IGBM). Cracking the code. London, IGBM, 1997
- Janz, N. K. & Becker, M. H. (1984). "The health belief model: a decade later". *Health Education & Behavior* 11 (1): 1-47.
- Labarere, J., Gelbert-Baudino, N., Ayril, A.-S., Duc, C., Berchotteau, M., Bouchon, N., Schelstraete, C., Vittoz, J.-P., Francois, P., & Pons, J. (2005). Efficacy of breastfeeding support provided by trained clinicians during an early, routine, preventive visit: A prospective, randomized, open trial of 226 mother-infant pairs. *Pediatrics*, 115(2), e139-e146.
- Lovera, D., Sanderson, M., Bogle, M. L., & Acosta, M. S. V. (2010). Evaluation of a breastfeeding peer support program for fathers of Hispanic participants in a Texas Special supplemental nutrition program for women, infants, and children. *Journal of the American Dietetic Association*, 110, 1696-1702.
- Lukac, M., Riley, J. K., & Humphrey, A. D. (2006). How to integrate a lactation consultant in an outpatient clinic environment. *Journal of Human Lactation*, 22(1), 99-103.
- Majee, W., Jefferson, U.T., Goodman, L.R. & Olsberg, J.E. (2016). (2016). Four years later: rural mothers' and employers' perspectives on breastfeeding barriers following the passage of the Affordable Care Act. *Journal of Healthcare for the Poor and Underserved*, 27: 1110-1125.
- Murimi, M., Dodge, C. M., Pope, J., & Erickson, D. (2010). Factors that influence breastfeeding decisions among special supplemental nutrition program for women, infants, and children participants from central Louisiana. *Journal of the American Dietetic Association*, 110, 624-627.
- Oasis (2017). Online analytical statistical information system: population web query. Retrieved from <https://oasis.state.ga.us/oasis/webquery/qryPopulation.aspx>
- Petrova, A., Ayers, C., Stechna, S., Gerling, J. A., & Mehta, R. (2009). Effectiveness of exclusive breastfeeding promotion in low-income mothers: A randomized controlled study. *Breastfeeding Medicine*, 4(2), 63-69.
- Taveras, E. M., Capra, A. M., Braveman, P. A., Jensvold, N. G., Escobar, G. J., & Lieu, T. A. (2003). Clinician support and psychosocial risk factors associated with breastfeeding discontinuation. *Pediatrics*, 112, 108-115.
- Wagner, C. L., Wagner, M. T., Ebeling, M., Chatman, K. G., Cohen, M., & Hulsey, T. C. The Role of Personality and Other Factors in a Mother's Decision to Initiate Breastfeeding. (2006). *Journal of Human Lactation*, 22(1), 16-26.
- Ziol-Guest, K. M., & Hernandez, D. C. (2010). First- and second-trimester WIC participation is associated with lower rates of breastfeeding and early introduction of cow's milk during infancy. *Journal of the American Dietetic Association*, 110, 702-709.

© Joanne Chopak-Foss and Felicia Yeboah. Originally published in jGPHA (<http://www.gapha.org/jgpha/>) May 15, 2017. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial No-Derivatives License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work ("first published in the Journal of the Georgia Public Health Association...") is properly cited with original URL and bibliographic citation information. The complete bibliographic information, a link to the original publication on <http://www.gapha.jgpha.org/>, as well as this copyright and license information must be included.