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**Introduction**

The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) provides food benefits, nutrition and breastfeeding education, and referrals to qualifying low-income participants. This study examined the association between participation in WIC services during pregnancy and breastfeeding at hospital discharge among women giving birth in Montana in 2014.

**Methods**

Birth certificates for Montana-resident women giving birth in Montana in 2014 were linked to a list of pregnant Montana women participating in WIC prior to delivery. Women were excluded from analysis if there were indications on the birth certificate of conditions that may interfere with breastfeeding (low birth weight, prematurity, sick infant admitted to the Neonatal Intensive Care Unit or transferred to another facility for medical reasons, serious maternal complications of delivery or mother transferred to another facility for medical reasons, multiple births). Women who were not either White or American Indian (2%) were also excluded because there were too few women of other races or ethnicities to support reliable statistical analysis. There were 12,202 births in Montana in 2014; after exclusions, there were 10,580 births for this analysis, including 3,478 women (33%) who were WIC participants during their pregnancies. Data were analyzed using SAS software. The univariate associations between breastfeeding at hospital discharge and maternal characteristics were assessed by chi square tests. The effect of WIC participation on breastfeeding, controlling for the independent effects of other maternal characteristics, was examined using the multiple logistic regression analysis. The Adjusted Odds Ratios from the multiple logistic regression described the association between a risk factor and an outcome (e.g., breastfeeding), while controlling for other risk factors that may also be related to both the risk factors and the outcome.

**Results**

Several maternal characteristics were associated with lower proportions of women breastfeeding their infants at hospital discharge (Table 1). The characteristics associated with low prevalence of breastfeeding were more common among WIC participants than among other women in the sample (Table 2). Based on these characteristics, we would expect WIC participants might breastfeed at lower rates.

<sup>1</sup> <http://www.fns.usda.gov/wic/women-infants-and-children-wic>

<sup>2</sup> Hosmer D. 2013. *Applied Logistic Regression*. Hoboken, New Jersey: Wiley.

Table 1. Breastfeeding at hospital discharge by maternal characteristics, Montana, 2014.

	N	%	X <sup>2</sup> p
Age			
< 20 years	550	80	0.01
20-29 years	5,220	89	
≥ 30 years	3,754	93	
Race			
White	8,619	92	0.01
American Indian	905	74	
Marital Status			
Married	6,376	94	0.01
Single	3,148	82	
Education			
High School or less	3,601	84	0.05
More than High School	5,923	94	
Payer for Delivery			
Private Insurance	6,318	94	0.05
Medicaid	3,206	83	
Prenatal Care			
First trimester	7,020	92	NS
Later or none	2,504	85	
Smoke in Pregnancy			
No	8,275	92	0.01
Yes	1,242	77	
WIC Participant			
No	7,102	93	NS
Yes	3,478	85	

Table 2. Maternal characteristics associated with breastfeeding at hospital discharge, by WIC enrollment, Montana 2014.

	WIC Participation		X <sup>2</sup> p
	% Yes	% No	
Age		%	
< 20 years	14	3	0.001
20-29 years	65	51	
≥ 30 years	22	46	
Race			
White	77	94	0.01
American Indian	23	6	
Marital Status			
Married	37	77	0.001
Single	63	23	
Education			
High School or less	63	29	0.001
More than High School	37	70	
Payer for Delivery			
Private Insurance	27	82	0.001
Medicaid	73	18	
Prenatal Care			
First trimester	65	76	NS
Later or none	35	24	
Smoke in Pregnancy			
No	73	90	0.01
Yes	27	10	

Despite the prevalence of these risk factors among WIC participants, the proportion of women who breastfed their infants at discharge from the hospital was not statistically significantly lower among WIC participants than among women not enrolled in WIC, after controlling for other maternal characteristics associated with breastfeeding (Figure 1).

In Figure 1, the vertical line at 1.0 represents women with the most favorable constellation of characteristics who breastfed their infants at hospital discharge. For each risk factor shown in the left margin, the dot represents the reduced adjusted odds of breastfeeding associated with that risk factor, and the horizontal line for each dot is the 95% confidence interval (CI) associated with that estimate. For all the risk factors except WIC participation, the proportion of women who were breastfeeding was significantly reduced, as shown by the fact that the CI does not touch the 1.0 line. In contrast, the adjusted odds of breastfeeding for WIC participants was not statistically significantly different from 1.0.

### Conclusion

Our analysis provides evidence that the Montana WIC program is having a positive impact on breastfeeding. The WIC program promotes and supports breastfeeding among high-risk women who otherwise might be unlikely to initiate breastfeeding.

Figure 1. Adjusted Odds Ratios of Breastfeeding at Hospital Discharge Associated with Maternal Characteristics, Montana, 2014

