Michigan Department of Community Health

MI PRAMS Delivery

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Breastfeeding Initiation and Three Months Exclusive Duration, MI PRAMS 2004-2008

Research suggests that breastfeeding is associated with a reduction in several negative infant and childhood outcomes, such as allergic disorders, gastrointestinal infections, obesity, diabetes, and lukemia.[1] However, it is not fully clear whether these relationships are due to an existing causal effect of breastfeeding or result from residual confounding. The latter could lead to a spurious association between breastfeeding and the reduction of negative infant and child outcomes if all relavent confounders are not controlled for in each study. Conversely, residual confounding could also conceal a true relationship between breastfeeding and outcomes of interest.

This issue of the MI PRAMS Delivery explores which factors measured by PRAMS are associated with breastfeeding initiation and three months exclusivity. Since the MI PRAMS survey is subject to many of the same limitations as other surveys—namely self-report, timing issues, and recall bias—causality cannot be inferred from the results. Even so, exploring factors associated with breastfeeding in a representative sample of Michigan mothers can help inform future research by indentifying potential confounding variables to control for in causal analyses. ◊

Inside This Issue:

Trends in Breastfeeding Initiation and Three Months Exclusive Duration, MI PRAMS 2004-2008

During the years 2004-2008, breastfeeding initiation was measured by MI PRAMS as the proportion of women who responded yes to the following question: "Did you ever breastfeed or pump breast milk to feed your new baby after delivery?"

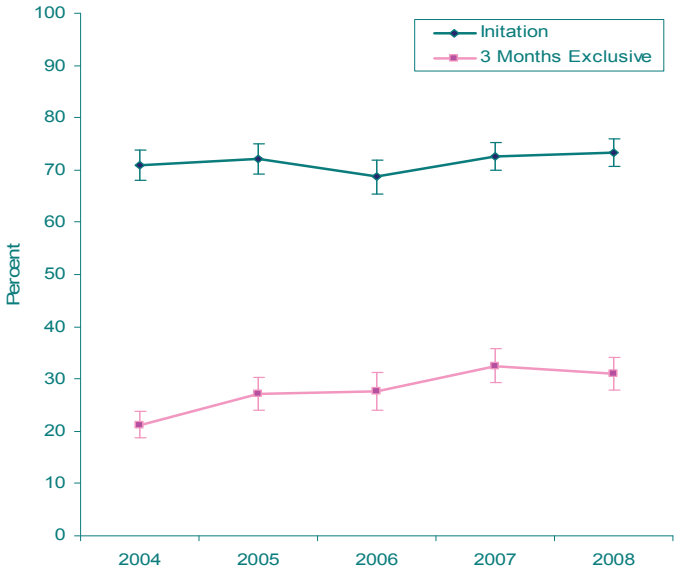
Three months exclusivity was determined by the proportion of women who answered at least 12 weeks or 3 months to the question: "How many weeks or months did you breastfeed or pump milk to feed your baby?" and also answered at least 12 weeks or 3 months, or "I have not fed my baby anything besides breast milk" when asked: "How old was your baby the first time you fed him or her anything besides breast milk?"

Breastfeeding initiation did not change significantly from 71.0% in 2004 to 73.4% in 2008 (Figure 1) and was lower than the Healthy People 2010 goal of 75% (p-value for trend = 0.83).

Three months exclusive breastfeeding increased from 21.2% in 2004 to 31.0% in 2008 (p-value for trend = 0.04).

Despite the significant ten percent increase, the prevalence of three months exclusive breastfeeding was only slightly more than half the Healthy People 2010 goal of 60% in 2008.[2] ◊

Figure 1. Breastfeeding Initiation and Three Months Exclusive Duration Trends, MI PRAMS 2004-2008



Demographic Characteristics of Women Who Initiated Breastfeeding and Those Who Breastfed Exclusively for Three Months

Figure 2. Breastfeeding Initiation by Selected Demographic Variables, MI PRAMS 2008

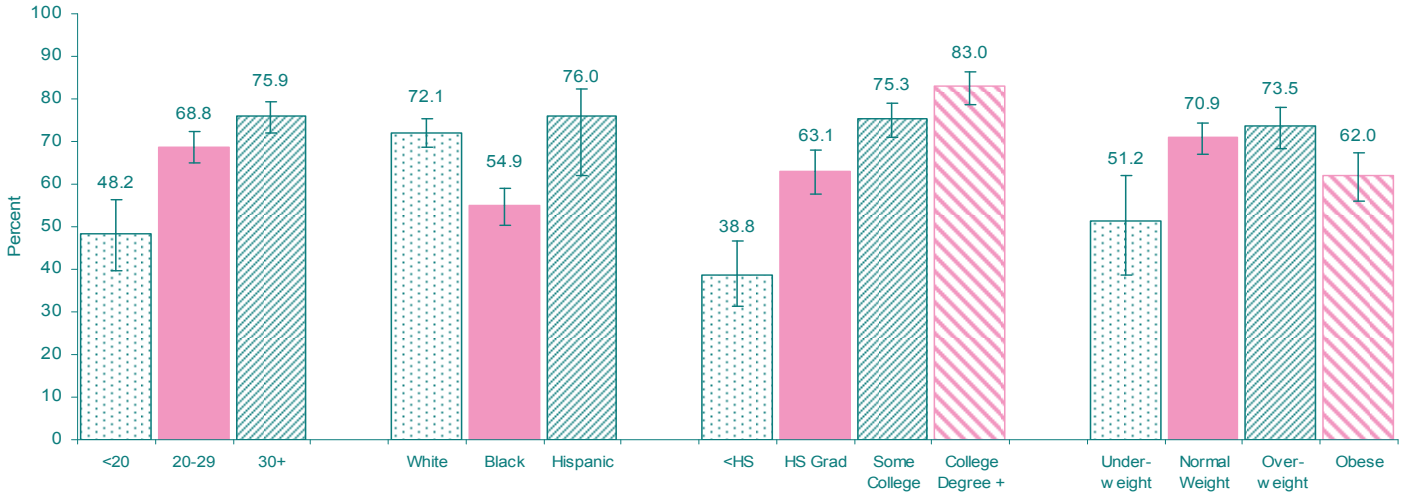


Figure 2 shows the prevalence of breastfeeding initiation stratified by several maternal demographic characteristics. Initiation increased with each consecutive group of maternal age and education level.

Consistent with national estimates,[3] the prevalence of breastfeeding initiation was lower among non-Hispanic black women than among their non-Hispanic white counterparts (54.9% vs. 72.1%, respectively), and this difference was statistically significant. Hispanic women initiated breastfeeding about as often as non-Hispanic white women.

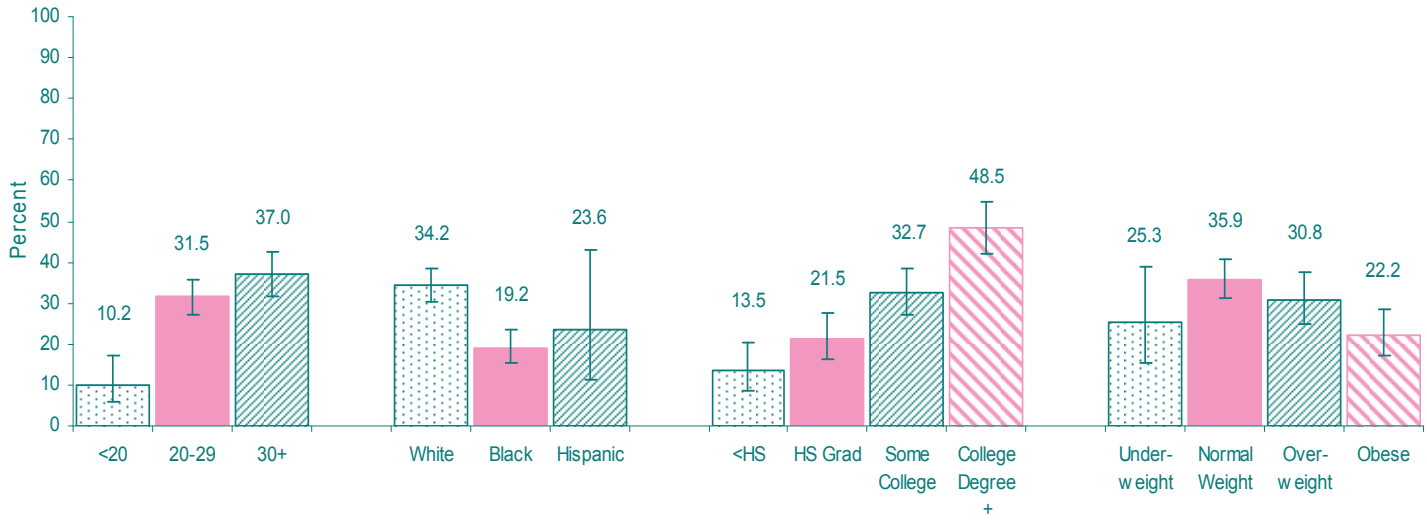
Recent studies have found an association between maternal prepregnancy obesity and both breastfeeding initiation and duration.[4] In the 2008 MI PRAMS population, this appears to hold true: approximately 71% of normal weight women (BMI 20 to <25) initiated breastfeeding, compared to only 62.0% of obese women (BMI ≥30).

Similar demographic patterns were found among women who breastfed exclusively for three months (Figure 3). Like initiation, three months exclusivity increased as maternal age group and education level increased.

The prevalence of three months exclusivity among non-Hispanic black women was only 19.2%, significantly lower than the 34.2% in non-Hispanic white women. The estimate for Hispanic women is not as clear: although it appears that the prevalence is about 10% lower than that of non-Hispanic white women, a small sample size of Hispanic women lead to a wide confidence interval, which indicates that the difference is not statistically significant.

As with initiation, the prevalence of three months exclusivity among obese women was lower than that of normal weight women. However, the gap is wider for three months exclusivity (13.7% lower for obese women) than for initiation (8.9% lower for obese women).◇

Figure 3. Three Months Exclusive Breastfeeding Duration by Selected Demographic Variables, MI PRAMS 2008



Factors Associated With Breastfeeding Initiation and Three Months Exclusivity, MI PRAMS 2008

Multivariate logistic regression was conducted to determine which factors were associated with breastfeeding initiation and three months exclusivity. Variables considered for the initiation model were maternal age, race/ethnicity, education, prepregnancy insurance status, parity, BMI group, pregnancy intention, gestational diabetes, high blood pressure during pregnancy, low birthweight, premature delivery, and any bed sharing.

Table 1 depicts the factors that were significantly associated with initiation after adjustment for confounding. Non-Hispanic black women were about 35% less likely to initiate breastfeeding as non-Hispanic white women. Hispanic women were three and a half times more likely to start than non-Hispanic white women—information that wasn't apparent from the unadjusted prevalences shown in Figure 2. Further, women with a high school diploma or less and those insured by Medicaid were half as likely to initiate breastfeeding as those with at least some college education and who were privately insured, respectively. Smoking in the postpartum period was also associated with initiation: women who were smokers at the time of the survey were 60% less likely to start breastfeeding than nonsmokers.

Table 1. Factors Associated With Breastfeeding Initiation, MI PRAMS 2008

Factor	Odds Ratio	95% Confidence Interval
Black	0.6	(0.5 - 0.9)
Hispanic	3.5	(1.1 - 11.1)
White	1.0	Reference
≤HS Diploma	0.5	(0.4 - 0.7)
Some College+	1.0	Reference
Medicaid	0.6	(0.4 - 0.8)
Private Insurance	1.0	Reference
Smoker Postpartum	0.4	(0.3 - 0.6)
Nonsmoker Postpartum	1.0	Reference

The same set of potential confounding variables from the initiation model was also considered for the exclusivity model. Table 2 shows the variables found to be significantly associated with three months exclusivity.

As with initiation, women who had a high school diploma or less and who were insured by Medicaid before pregnancy were 40% and 60% less likely to breastfeed exclusively for three months than women with at least some college education and those who where privately insured, respectively. (Uninsured women were not significantly different from privately insured in either model, data not shown.)

Race/ethnicity was not a significant factor for three months exclusivity, suggesting that among those who initiate breastfeeding, similar proportions of women breastfeed exclusively for three months across race/ethnic groups.

Women with unintended pregnancies were 40% less likely to breastfeed exclusively for three months than those with intended pregnancies, and overweight/obese women were 30% less likely than normal/underweight women—factors that were not significant for initiation. ◊

Table 2. Factors Associated With Three Months Exclusivity, MI PRAMS 2008

Factor	Odds Ratio	95% Confidence Interval
≤HS Diploma	0.6	(0.4 - 0.8)
Some College+	1.0	Reference
Medicaid	0.4	(0.3 - 0.7)
Private Insurance	1.0	Reference
Unintended Pregnancy	0.6	(0.4 - 0.9)
Intended Pregnancy	1.0	Reference
Overweight/Obese	0.7	(0.5 - 1.0)
Under/Normal Weight	1.0	Reference
Smoker Postpartum	0.4	(0.2 - 0.7)
Nonsmoker Postpartum	1.0	Reference

About MI PRAMS

The Pregnancy Risk Assessment Monitoring System (PRAMS), a population-based survey, is a CDC initiative to provide data about risk factors for infant mortality and low birth weight.

It is a combination mail/telephone survey designed to monitor selected self-reported maternal behaviors and experiences of women who delivered a live infant in Michigan that occur before and during pregnancy, as well as early postpartum periods. Information regarding the health of the infant is also collected for analysis.

Annually, over 2,000 mothers are selected at random to participate from a frame of eligible birth certificates. Women who deliver a low birth weight infant are oversampled in order to ensure adequate representation. The results are weighted to represent the entire cohort of women who delivered during that time frame. ◊

References

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3. Li R, Grummer-Strawn L. Racial and ethnic disparities in breastfeeding among United States infants: third National Health and Nutrition Examination Survey, 1988-1994. *Birth* 2002;20:251-7.
4. Amir LH, Donath S. A systematic review of maternal obesity and breastfeeding inention, initiation, and duration. *BMC Pregnancy and Childbirth* 2007;7 (9). ◊

Past and future editions of the MI PRAMS Delivery newsletter are available electronically at:

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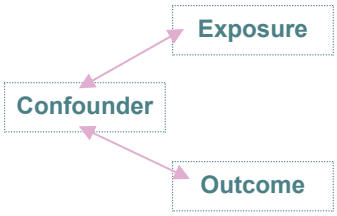
Epi Corner: Adjusting for Confounding

Confounding is an issue occuring in most epidemiologic studies that can either mask an association between two variables or show an association when, in fact, one does not exist. Confounding is present when the relationship between an exposure and an outcome is affected by a third variable, or confounder. A confounder is correlated with both the exposure and the outcome variables (Figure 4), but is not part of the causal pathway between the two (meaning that it is not caused by the exposure).

There are several different ways to adjust for confounding in observational studies. The method used most often in the MI PRAMS Delivery is adjustment for confounders statistically in a regression model. This is done by a computer program, which estimates the effect of the exposure on the outcome, while holding all other variables at a constant value across groups, thereby "controlling" for the other variables, or confounders.

An example of an estimate after adjusting for confounding is the odds ratio for Hispanic women who initiated breastfeeding compared to non-Hispanic white women (3.5 CI: 1.1 -11.1). The logistic regression model controlled for education level, insurance status, and postpartum smoking in order to estimate the effect of Hispanic ethnicity on breastfeeding initation. The confounding effects of education, insurance status, and smoking masked the true relationship between ethnicity and initation in the prevalence estimates shown in Figure 2. ◇

Figure 4. Relationship Between Confounder, Exposure, and Outcome



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