

Recommendations:

I. Educate health care providers and families about the importance of exclusive breastfeeding and factors that shorten duration such as:

- Delayed initiation of breastfeeding
- Risks of supplementation
- Returning to work

II. Increase professional lactation support

- Ensure the availability of skilled lactation professionals in all healthcare facilities that deliver perinatal or pediatric care.
- Increase the number of International Board Certified Lactation Consultants (IBCLC) in Oklahoma.

III. Increase community support and resources

- Support formation of mother-to-mother (peer) support groups like La Leche League
- Advocate for lactation friendly workplaces that provide adequate time and space for mothers to express milk.

IV. Provide targeted, evidence-based interventions to increase breastfeeding duration in groups at high risk for early weaning, including:

- Women under 25
- Smokers
- Women with low socioeconomic levels
- Mothers with preterm or sick babies

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Funding for the PRAMS Project is provided in part by the Centers for Disease Control and Prevention, Atlanta, GA (Grant No.U50/CCU613668-09), and the Title V Maternal and Child Health Block Grant, Maternal and Child Health Bureau, Department of Health and Human Services.

The *PRAMS GRAM* is issued by the Oklahoma State Department of Health, as authorized by James M. Crutcher, Commissioner of Health. Oklahoma Correctional Industries printed 6,000 copies in September 2005 at a cost of \$2,017.40. Copies have been deposited with the Publications Clearinghouse of the Oklahoma Department of Libraries.

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PRAMSGRAM

OKLAHOMA PREGNANCY RISK ASSESSMENT MONITORING SYSTEM VOL 9 NO 2

Breastfeeding, Part II :Duration

Introduction:

Extended breastfeeding has long term benefits for infants, children, mothers, and the community. The importance of continued breastfeeding is emphasized in the Healthy People 2010 Objective 16-19 b and c, which targets increasing the proportion of women who continue to breastfeed their infants until six months of age, from 29 percent to at least 50 percent. The objective also targets increasing from 16 percent to 25 percent, the proportion of women who continue to breastfeed until their infants reach 12 months of age¹. The American Academy of Pediatrics and the World Health Organization recommend exclusive breastfeeding for approximately the first six months of life. They further recommend that breastfeeding continue for at least 12 months, and thereafter for as long as mutually desired².

Infants with a family history of diabetes, who have been breastfed exclusively for at least four months, have a decreased risk of developing Type 1 Diabetes, as well as a decreased risk of developing asthma and eczema³⁻⁵. Those breastfed for more than six months have decreased risks of being overweight or obese as children, adolescents, and adults⁶.

Additionally, extended breastfeeding promotes maternal health. Breastfeeding may help prevent the development of diabetes and heart disease in women⁶. Studies have demonstrated that in developed countries, increasing the duration of breastfeeding by six months could decrease the incidence of breast cancer by 15,000 cases per year⁷. For other noted breastfeeding health impacts, see the Breastfeeding, Part I: Initiation *PRAMSgram*.

Extended breastfeeding has the potential to offer socioeconomic benefits to families and communities as well. Employers who have adopted breastfeeding support policies have noted a cost savings of \$3 for every \$1 invested, as well as decreased health care costs of approximately \$400 per breastfed baby in the first year of life. Increased employee productivity, loyalty, and morale were also observed². Breastfed infants typically require fewer sick care visits, prescriptions, and hospitalizations. Therefore U.S. annual health care costs could be reduced by as much as 3.6 billion dollars (or 20%)³.

Despite these benefits, the United States has one of the lowest rates of breastfeeding in the developed world. While most new mothers initiate breastfeeding, more than half discontinue by six months, and only 13 percent of children are exclusively breastfed at six months³. This *PRAMSgram*, Part II, will define duration rates and address factors influencing breastfeeding duration in Oklahoma.

In Oklahoma

- Approximately 60% of Oklahoma mothers breastfed their infants for at least 2 weeks.
- Only one in ten infants in Oklahoma was breastfed exclusively at the time of the survey, regardless of duration.
- Of those women who initiated breastfeeding almost 10% quit during the first two weeks.
- Women who smoke are much more likely to quit breastfeeding earlier than mothers who do not smoke.
- Only 52.6% of infants in child care had been breastfed for more than 8 weeks, compared to 62.6% of children not in child care.

Methods:

PRAMS asked mothers, "Did you ever breastfeed or pump breast milk to feed your new baby after delivery?" Mothers who indicated that they had breastfed their infant were asked, "Are you still breastfeeding or pumping?" and "How many weeks or months did you breastfeed or pump milk?" Exclusivity was determined by the question "How old was your baby the first time you fed him/her anything other than breast milk?"

Using SUDAAN software, the prevalence and 95% confidence intervals were calculated for the duration of breastfeeding. Prevalence estimates by demographic and pregnancy-related characteristics are described. The chi-square statistic was used to determine significant associations using a significance level of $p \leq .05$.

PRAMS is an ongoing, population-based surveillance system designed to gather information about maternal behaviors and experiences before, during and after a woman's pregnancy. Each month a sample of approximately 200 new mothers is taken from the Oklahoma live birth registry. Sampled mothers are mailed up to three questionnaires after which non-respondents are contacted for telephone interviews. PRAMS employs a systematic stratified sampling design; births are stratified by birth weight. Mothers at high risk of adverse pregnancy outcomes are oversampled. Using information from the birth certificate, analysis weights are developed to adjust for selection probability and non-response. For this report, PRAMS data covering the period 2000-2002 were examined. There were 5,767 women responding to the survey over this time period, yielding a response rate of 79%.

Results:

Almost 70% of mothers initiated breastfeeding in Oklahoma in 2000-2002. Statewide prevalence data indicates that 59.8% of all mothers breastfed for at least 2 weeks. At more than eight weeks postpartum, this number had decreased significantly to 40.2% of the maternal population.

Figure 1: Length of Breastfeeding Duration Among Women Who Initiated OK PRAMS 2000-2002

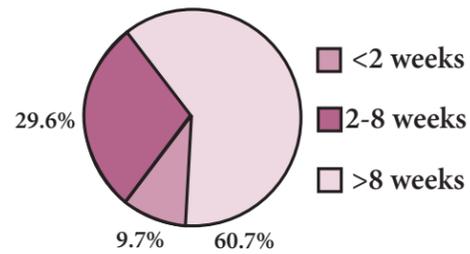
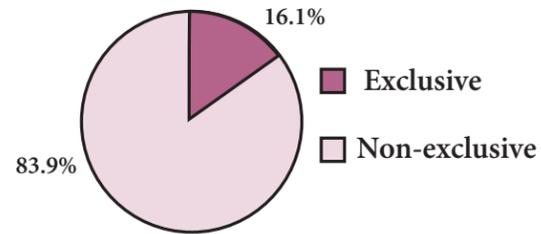


Figure 2: Breastfeeding Exclusivity Among Women Who Initiated OK PRAMS 2000-2002



Upon examination of those mothers who initiated breastfeeding with their newborn, approximately one in ten stopped during the first two weeks (9.7%; See Figure 1). Over sixty percent (60.7%) of initiators continued for more than 8 weeks. However, only 16.1% of mothers who began breastfeeding did so exclusively, irrespective of duration (See Figure 2).

Comparing only those women who initiated breastfeeding, there appears to be no statistically significant differences between racial and ethnic groups for duration. Age, however, did appear to have a significant influence on the length of duration. Women less than 20 years of age were significantly less likely to breastfeed for more than 8 weeks than any other age group (40.7% vs. 53.9%, 65.5% and 71.8% respectively; See Table 1). They were more likely to quit in their first two weeks compared to those women 25 and older.

Table 1: Length of Breastfeeding Duration Among Those Who Initiated by Maternal Age, Education, and Marital Status OK PRAMS 2000-2002

Characteristic	< 2weeks Percent (95%CI)	2-8 weeks Percent (95%CI)	>8 weeks Percent (95%CI)
Age			
<20	17.2 (12.3, 23.6)	42.0 (34.9, 49.5)	40.7 (33.6, 48.2)
20-24	12.2 (9.4,15.8)	33.8 (29.6, 38.4)	53.9 (49.2,58.6)
25-29	7.4 (5.3, 10.2)	27.1 (23.2, 31.5)	65.5 (61.0,69.8)
30+	6.1 (4.2, 8.6)	22.1 (18.5, 26.2)	71.8 (67.5, 75.8)
Education*			
<12	12.0 (7.5, 18.8)	32.0 (24.8, 40.1)	56.1 (47.7, 64.1)
12	10.6 (7.9, 13.9)	30.8 (26.6, 35.3)	58.7 (53.9, 63.3)
>12	6.9 (5.3, 9.0)	25.1 (22.1, 28.3)	68.0 (64.6, 71.3)
Marital Status			
Married	6.3 (5.0, 7.9)	26.5 (23.9, 29.2)	67.3 (64.4, 70.0)
Other	16.2 (13.1, 19.9)	35.7 (31.5, 40.2)	48.1 (43.5, 52.7)

*Includes only those ≥ 20 years of age

Factors relating to socioeconomic status also impacted length of duration. Mothers with more than 12 years of education were significantly more likely to breastfeed for more than 8 weeks compared to women with a high school education or less (68.0% vs. 58.7% and 56.1% respectively). Medicaid recipients were less likely to maintain breastfeeding for long durations. They were more likely to stop before two weeks (12.3% vs. 7.8%) and far less likely to breastfeed beyond eight weeks, when compared to mothers not receiving Medicaid-funded services (53.2% vs. 66.0%).

Smoking status appears to be strongly linked to duration as well. Women who smoked postpartum were far less likely to breastfeed for any given time period, and all differences between smokers and non-smokers were highly significant. More than half of those who smoked and attempted breastfeeding quit by 8 weeks postpartum (See Table 2).

Table 2: Length of Breastfeeding Duration Among Those Who Initiated by Maternal Characteristics OK PRAMS 2000-2002

Characteristic	< 2weeks Percent	2-8 weeks Percent	>8 weeks Percent
Medicaid Participation			
Yes	12.3 (9.9, 15.3)	34.6 (30.8, 38.5)	53.2 (49.1, 57.2)
No	7.8 (6.2, 9.8)	26.2 (23.4, 29.1)	66.0 (62.9, 69.0)
Postpartum Smoking Status			
Smoker	14.7 (11.0, 19.3)	42.3 (36.9, 48.0)	43.0 (37.4, 48.7)
Non-Smoker	8.5 (7.0, 10.2)	25.8 (23.4, 28.4)	65.7 (63.0, 68.4)

*Denotes Prenatal Care or Delivery paid for by Medicaid

Table 3: Length of Breastfeeding Duration And Infant Characteristics Among Those Who Initiated OK PRAMS 2000-2002

Characteristic	< 2weeks Percent (95%CI)	2-8 weeks Percent (95%CI)	>8 weeks Percent (95%CI)
Infant Birth Weight			
Very Low	4.5* (3.7, 5.5)	45.7 (43.7, 47.8)	49.8 (47.7, 51.8)
Low	10.6 (8.8, 12.6)	42.2 (39.3, 45.2)	47.3 (44.3, 50.2)
Normal	9.6 (8.0, 11.6)	28.9 (26.3, 31.7)	61.5 (58.5, 64.4)
High	10.7 (8.9, 12.7)	27.0 (24.4, 29.8)	62.3 (59.3, 65.3)
In ICU After Delivery			
Yes	8.1* (4.8, 13.3)	40.9 (34.3,47.9)	51.0 (44.1, 57.9)
No	9.8 (8.3, 11.6)	28.2 (25.9, 30.8)	61.9 (59.3, 64.5)
Attended Child Care			
Yes	13.2 (9.3, 18.3)	34.3 (28.5, 40.5)	52.6 (46.2, 58.9)
No	9.1 (7.6, 10.8)	28.4 (25.9, 30.9)	62.6 (59.8, 65.2)

*Denotes small cell sizes

Very low birth weight and low birth weight infants were less likely to be breastfed for more than 8 weeks when compared to normal and high birth weight babies (49.8% and 47.3% vs. 61.5% and 62.3%, respectively; See Table 3). Although breastfeeding initiation rates were similar for infants who were in the Intensive Care Unit (ICU) and those who were not, infants who were placed in ICU after delivery were less likely to be breastfed beyond 8 weeks (51.0% compared to 61.9%).

Oklahoma mothers returning to work and school may also be less likely to continue breastfeeding for long durations. Infants placed in child care were less likely to be breastfed beyond 8 weeks, compared to those infants who were not in child care at the time of survey (See Table 3). PRAMS did not ask mothers why their infants were placed in child care or if the mother had returned to work.

Discussion:

Research indicates that exclusive breastfeeding for at least four to six months can have a multitude of health benefits for the infant as well as for the mother³. In Oklahoma, however, few infants are breastfed exclusively for any length of time, limiting their exposure to many of the benefits of breast milk. In addition to encouraging women to continue breastfeeding for longer periods, more attention needs to be paid to overall feeding practices for the first six months.

Factors positively affecting the duration of breastfeeding include maternal education; peer, professional, and workplace support; and media and marketing efforts⁸. A large-scale review by the US Preventive Services Task Force in July 2003, determined that education on breastfeeding was the most effective single intervention for increasing both breastfeeding initiation and short-term duration. Peer support programs are also effective in increasing initiation and duration in a multitude of population groups, including disadvantaged, low, and middle-income groups⁸.

Approximately 70% of employed mothers with children younger than three years of age work full-time⁸. One-third of these mothers return to work within three months after birth and two-thirds within six months⁸. Working outside the home is related to a shorter duration of breastfeeding, and intentions to work full-time are significantly associated with lower rates of breastfeeding initiation and shorter duration^{8,9}. Low-income women are more likely than their higher-income counterparts to return to work earlier and to have jobs that make it challenging for them to continue breastfeeding^{8,10}.

Several limitations for this study exist. The analysis examined variables independently and did not control for covariates. Adjusting for covariates may moderate these relationships. The longest period of duration that can be studied is “more than eight weeks” postpartum, because some mothers may receive and return a PRAMS survey within 9-10 weeks of the child’s birth.