Early Postpartum: A Critical Period in Setting the Path for Breastfeeding Success

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Abstract

**Background:** In the United States, most mothers who initiate breastfeeding will either stop or begin supplementing with formula before their infants are 3 months old. Routine breastfeeding education and support following hospital discharge are critical to breastfeeding success. The purpose of this article is to identify this critical period for supporting and reinforcing breastfeeding.

**Methods:** We will use data from participants enrolled in the Maryland State Program of the U.S. Department of Agriculture’s Supplemental Nutrition Program for Women, Infants, and Children (WIC). This cross-sectional study will explore whether breastfeeding patterns during the period between birth and postnatal WIC certification differ by participation in a local WIC agency that provides breastfeeding peer counselor support (PC) versus two comparison groups, the lactation consultant (LC) and standard care (SC) groups.

**Results:** During 2007, 33,582 infants were enrolled in the Maryland State WIC program. Infant breastfeeding status was categorized as exclusively breastfeeding, partially breastfeeding, or not breastfeeding. At certification, 30.4% of infants were breastfeeding, 25.3% had been breastfed but had stopped before certification in WIC, and 44.3% never breastfed. The breastfeeding initiation rate was higher for the PC group compared with the LC and SC groups (61.6% vs. 54.4% and 47.6%, respectively; \( p < 0.001 \)). Participants in the PC group were more likely to certify as exclusively and partially breastfeeding compared with the LC and SC groups (36.0% vs. 24.8% and 25.3%, respectively; \( p < 0.001 \)).

**Conclusion:** Our analysis identifies a window of opportunity during which targeted contact with breastfeeding mothers could enhance longer-term breastfeeding rates.

Introduction

Although U.S. breastfeeding initiation rates are at their highest levels ever, approaching the Healthy People 2010 goal of 75%,1 breastfeeding duration rates are well below the goal of 50% at 6 months1 and 25% at 1 year. More than half of mothers who initiate breastfeeding either stop entirely or begin formula supplementation before their infants reach 3 months, and one in four breastfed infants receives infant formula within 2 days of birth, usually before leaving the hospital.2,3

Barriers to breastfeeding exclusivity and duration have been extensively reported in the literature, and several common themes have been identified. The literature on breastfeeding practices in the United States reports that the main reasons mothers give for stopping breastfeeding before 3 months of age are perceived lack of breastmilk supply, pain, infants given infant formula in the hospital, and technical difficulties such as infant latching problems and sore nipples.4 However, other reasons for early termination include return to work or school, lack of breastfeeding education and support, inexperience, lack of confidence; psychological distress, societal disapproval, time requirements, feeling overwhelmed, mother’s illness, problems with pumping, and wanting someone else to feed the infant.5–10 Barriers may act in conjunction with one another to prevent mothers from meeting health recommendations and personal breastfeeding goals.

Low-income women appear particularly vulnerable to breastfeeding barriers. In the Maryland State Program of the

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U.S. Department of Agriculture’s Supplemental Nutrition Program for Women, Infants, and Children (WIC), which serves the vast majority of low-income Maryland mothers with infants, only 57% of mothers initiate breastfeeding. WIC recommends that infants be certified as close to birth as possible so that the program can better provide optimal, early, and ongoing support for breastfeeding dyads. Most infants certified have mothers who were certified in WIC prenatally, although this is not a requirement of infant certification. Breastfeeding initiation rates have been rising nationally, from 61.9% in 2000 to 67.5% in 2007, in part because of The Child Nutrition and WIC Reauthorization Act of 1989, which required a portion of the WIC budget be allocated to the promotion and support of breastfeeding and instructed each state WIC agency to designate a breastfeeding promotion coordinator.

Lower breastfeeding rates among low-income mothers are compounded by early formula supplementation and early breastfeeding termination. In general, mothers who encounter early breastfeeding difficulties are more likely to terminate prior to 1 month. Mothers with the fewest resources may have the least ability to overcome these difficulties, yet little attention has been directed at the large number of low-income mothers who initiate breastfeeding but terminate the practice during the neonatal period.

Barriers to breastfeeding continuation can potentially be resolved through timely “hands on” support and assistance by professionals such as International Board Certified Lactation Consultants (IBCLCs) or trained paraprofessionals, such as doulas and WIC peer counselors. Providing prenatal and postpartum anticipatory guidance has been shown to support breastfeeding initiation and duration. Among women initiating breastfeeding, the steepest decline in breastfeeding occurs among infants aged 2 and 6 weeks. The first 2–3 weeks of breastfeeding constitute the critically important learning period and the time when routine breastfeeding education and support from medical and community sources is most needed. Even so, little attention has focused on this critical period in terms of services to support, educate, and encourage mothers who have elected to breastfeed. Recent reports indicate that the costs of any supplementation with infant formula are great, but, unfortunately, few healthcare providers routinely document breastfeeding support during this time.

The purpose of this article is to report on this critical period in supporting and reinforcing breastfeeding during the early postnatal period. We use data from participants enrolled in the Maryland State WIC Program, focusing on the period between birth and postnatal WIC certification. Currently, all WIC staff in Maryland are trained to provide prenatal and postnatal breastfeeding education. Many WIC agencies also employ lactation consultants and breastfeeding peer counselors. Participation in local agencies that provide breastfeeding peer counselors has been associated with increased breastfeeding initiation rates among WIC participants. We will also explore whether breastfeeding patterns during this critical period differ among women participating in a local WIC agency that provides breastfeeding peer counselor support. In addition, we will explore how timing of certification in local WIC agencies is associated with breastfeeding patterns.

Subjects and Methods

Population

The WIC staff in the state where this study was conducted certifies mothers and infants as eligible participants using an electronic information system, WIC on the Web. This is an administrative database used to collect demographic, financial, health, and nutrition characteristics of WIC enrollees. Those participating in the WIC program are pregnant or postpartum women, infants, or children under 5 years of age. Participants must meet the financial guideline of being at or below 185% of the poverty line and have an identified program-specific nutritional risk. Participation in the Supplemental Nutrition Assistance Program (formerly food stamps), Medical Assistance, and Temporary Cash Assistance Programs automatically qualifies an individual as meeting financial eligibility. Between January 1 and December 31, 2007 (the time period on which this article reports) 33,582 infant participants were enrolled in the statewide WIC program.

Certification data

During WIC certifications, infants are required to be present, as anthropometric measurements are taken. Residency, income, and identification (i.e., birth certificate or hospital-issued crib card) are reviewed, and medical/health/nutrition history is assessed. Infant age at certification is based on birth date. Age was categorized as ≤2 weeks, >2 weeks but ≤1 month, >1 month but ≤2 months, and >2 months. Nutrition education is provided to all adult participants and includes breastfeeding support and anticipatory guidance, as well as referrals.

Infant feeding data

Infant breastfeeding status is collected at time of certification, categorized as exclusively breastfeeding, partially breastfeeding, or not breastfeeding, and is documented in the WIC on the Web system. For the purposes of this article, breastfeeding includes both exclusive and partial breastfeeding. If earlier breastfeeding was reported for non-breastfeeding infants, the amount of breastfeeding and the date that breastfeeding was terminated are recorded. Data on breastfeeding initiation are available for all mothers. Data on breastfeeding duration were available for all mothers who were breastfeeding at certification. Breastfeeding duration data were available for only 50% of mothers who initiated but terminated breastfeeding prior to WIC certification. Infant Certification Status for the Maryland WIC is categorized as infant exclusively breastfeeding, for which the infant is provided the WIC benefit of breastfeeding support, infant partially breastfeeding, for which the infant is provided the WIC benefit of breastfeeding support along with an amount of infant formula (up to 26 ounces per day) that best matches the current supplementation level reported by the mother, and infant full formula, for which the infant is provided approximately 26 ounces of infant formula per day.

Local agency data

Three different breastfeeding support comparison groups were identified within the 19 Maryland local WIC agencies:
Four local agencies have a trained WIC staff only, five of the local WIC agencies have a trained staff plus at least one IBCLC, and 10 local WIC agencies have a peer counselor program. The peer counselors are supervised by someone knowledgeable in breastfeeding but who may or may not have the IBCLC credential. We have categorized these local agencies as Maryland WIC Standard Care (SC), Lactation Consultants (LC), and Peer Counselor (PC) Program. The Maryland WIC PC Program requires that peer counselors attend a 20-hour standardized training, and peer counselor duties are uniform throughout the state. All WIC participants enrolled at local agencies with peer counselor programs are offered the opportunity to speak with a peer counselor and encouraged to do so. Very few decline. Peer counselors attempt to make contact with participants at minimum once per trimester while pregnant. The Maryland WIC policy states that peer counselors then reach out for WIC participants around the time of birth and then weekly for the first month of the infant's life. Subsequently, the policy is to contact families monthly during the second and third months of life, once at 6 months, 9 months, and 12 months, and then yearly after that. Those participants in clinics with IBCLCs do not have any predesignated contact schedule. IBCLCs will make contacts upon the request of the participant, usually as a result of a breastfeeding-related difficulty. This is further elaborated by Gross et al.17

Analysis

Frequency distributions of infant age at certification, infant breastfeeding status, and infant breastfeeding duration were estimated for the entire sample and by local WIC agency breastfeeding support comparison groups. Frequency distributions of selected maternal and infant demographic variables were generated, and demographic variables were cross-tabulated with breastfeeding rates at certification. Infant race/ethnicity was utilized as a measure of mother’s race/ethnicity. Previous research7,17 using these data indicated that the PC Program was an effective intervention when controlling for clinic setting and mother’s race/ethnicity. (For a more detailed discussion, see Gross et al.17) All statistical tests were conducted using SAS version 9.2 (SAS Institute, Cary, NC) and SPSS-IBM version 19 (beta) (SPSS Inc., Chicago, IL).

Institutional Review Board approval

Institutional Review Board approval was obtained from The Johns Hopkins University, Human Subjects Committee. Institutional Review Board approval was also obtained from the State of Maryland, Department of Health and Mental Hygiene Institutional Review Board. Identifiers were excluded prior to data transmission, as part of Institutional Review Board requirement.

Results

The mean maternal age was 25.55 ± 5.89 years. Of the infants, 50.5% were non-Hispanic African-American, 22.1% were non-Hispanic white, and 23.8% were Hispanic, with the remainder being non-Hispanic other, which included Asian, Native American, and other. In terms of income, 66% were at or below the federal poverty level. The mean total birth weight of the sample was 3,192.74 ± 597.21 g; 11.1% of infants were born before 37 weeks of gestation. Of the sample, 55.7% had initiated breastfeeding.

In this study, 43.2% of infants were certified by the age of 2 weeks. Between 2 weeks and 2 months, an additional 47.2% were certified, and more than 90% were certified by 2 months. At the time of certification, 30.4% of infants were breastfeeding, 25.3% had been breastfed but had stopped before certification in WIC, and 44.3% never breastfed. Considering age of certification by infant certification category shows that infants exclusively breastfeeding were more likely to be certified after 30 days of life (34%), compared with infants partially breastfeeding (22.6%) and infants receiving full formula (22.2%). For infants exclusively breastfeeding, the mean age at certification was 36.8 ± 44.4 days compared with 27.3 ± 33.0 days for infants partially breastfeeding and 28.2 ± 44.7 for infants receiving full formula.

Hispanic infant participants were more than twice as likely to be certified as partially breastfeeding at WIC certification than non-Hispanic white and non-Hispanic African American infant participants (49.0% vs. 11.0% and 20.5%, respectively; p < 0.001). The age at certification for infants also varied by race/ethnicity: Hispanic infants were more likely to be certified after 2 weeks of age than non-Hispanic white and non-Hispanic African American infant participants (46.1% vs. 31.6% and 28.6%, respectively; p < 0.001).

Table 1 presents age at certification, infant certification status, breastfeeding initiation, breastfeeding amount, and breastfeeding duration for infants who stopped breastfeeding before certification by breastfeeding support comparison group. Participants in the PC group and the LC group were more likely to be certified after 14 days compared with the participants in the SC group (59.4% vs. 62.7% vs. 48.0%, respectively; p < 0.001). Participants in the PC group were more likely to be certified as infants exclusively breastfeeding and infants partially breastfeeding compared with the LC group or SC group (36.0% vs. 24.8% and 25.3%, respectively; p < 0.001). The breastfeeding initiation rate was higher for the PC group compared with the LC group or SC group (61.6% vs. 54.4% and 47.6%, respectively; p < 0.001). Breastfeeding duration was longer for the LC group compared with the PC and SC groups (42.3 ± 50.8 days vs. 38.7 ± 47.8 days and 38.2 ± 49.0 days, respectively). For those who initiated breastfeeding but stopped before WIC certification, there was no difference by breastfeeding support group. The median breastfeeding duration for this group was 11 days. Our data show that approximately 97.0% who stopped breastfeeding before WIC certification were only minimally breastfeeding (breastfeeding one to two times per day). Breastfeeding initiation rates and duration between the PC and SC groups and between the LC and SC groups remained statistically significantly different, even after adjusting for race/ethnicity.

Discussion

We found that although initiation rates are high (55.7%), nearly half of initiators cease breastfeeding prior to WIC re-certification. This suggests that many breastfeeding dyads may lack the breastfeeding support and assistance needed to continue for the durations desired by Healthy People.
guidelines.18 Community resources must band together to support breastfeeding women during this critical period, from hospital discharge until onset of postpartum health services (whether first pediatric follow-up visit, first WIC appointment, or obstetric follow-up visit). Because many women lack breastfeeding role models within their families,19,20 we recommend widespread availability of postpartum lactation support services for those who are breastfeeding because they often do not have elder maternal family members with breastfeeding experience.

Studies have shown that trained peers and lay-women in the doula model successfully provide support to women during childbirth and the early postpartum period.21 This model has been shown to decrease use of anesthesia during labor, increase successful breastfeeding initiation, and, most recently, improve breastfeeding duration through quicker onset of lactation. Furthermore, early onset of lactation significantly improved breastfeeding durations at 6 weeks. Quicker onset of lactation suggests that doula (peer) support during the critical window that we identify also reduced early maternal stress. In addition, breastfeeding mothers were significantly less likely to question their abilities to produce an adequate milk supply. It should be noted that perceived inadequate milk supply is one of the major reasons for women to begin supplementing or cease breastfeeding entirely. These findings support our premise that assistance for breastfeeding need be available during the early postpartum critical window—that time during discharge from the hospital and first onset of medical follow-up—to provide guidance as the new mother and baby dyad learn the skills of breastfeeding. Once those skills are learned, the dyad is more likely to continue breastfeeding, rather than terminate early. Support during the early critical window appears to pave the road for breastfeeding success. Our data showed that in situations in which Maryland WIC local agencies had additional breastfeeding support available in the form of peer counselors, there was a significant increase in women continuing to breastfeed beyond WIC recertification.

**Limitations**

Breastfeeding status was based on the report of each mother. Whether mothers indicate that they are breastfeeding may be influenced by maternal perception of the relative value of the foods provided by WIC to mothers and infants. For example, if mothers perceive that foods provided to those who are not breastfeeding have a higher cost benefit, they may deny that they are breastfeeding and instead take the food benefit.

The database that was utilized for this study is an administrative, centralized information system designed for the management of the Maryland WIC Program. It does not provide a nationally representative breastfeeding sample. The information system is limited to what the clinical program has determined useful and necessary. In addition, users of the system might not enter information that is not required by the system to continue the WIC certification process. A limit of the retrospective data collected for the administrative database was that data were sometimes incomplete or information was entered outside of designated parameters, and thus was unusable for this analysis. As a result breastfeeding duration data were unavailable for 50% of mothers who initiated

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**Table 1. Breastfeeding Practices by Breastfeeding Support Comparison Group**

<table>
<thead>
<tr>
<th>Breastfeeding support comparison groups [n (%)]</th>
<th>Breastfeeding peer counseling (n = 15,891)</th>
<th>Lactation consultant (n = 7,863)</th>
<th>Standard care (n = 10,028)</th>
<th>Total (n = 33,582)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at certification</td>
<td></td>
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<tr>
<td>≤14 days</td>
<td>6,376 (40.6)</td>
<td>2,931 (37.3)</td>
<td>5,216 (52.0)</td>
<td>14,523 (43.2)</td>
</tr>
<tr>
<td>15–31 days</td>
<td>5,888 (37.5)</td>
<td>2,624 (33.4)</td>
<td>2,857 (28.5)</td>
<td>11,369 (33.9)</td>
</tr>
<tr>
<td>32–60 days</td>
<td>1,899 (12.1)</td>
<td>1,417 (18.0)</td>
<td>1,156 (11.5)</td>
<td>4,472 (13.3)</td>
</tr>
<tr>
<td>≥61 days</td>
<td>1,528 (9.7)</td>
<td>891 (11.3)</td>
<td>799 (8.0)</td>
<td>3,218 (9.6)</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>28.92 (39.64)</td>
<td>30.97 (38.91)</td>
<td>25.57 (40.61)</td>
<td>28.40 (39.81)</td>
</tr>
<tr>
<td>Infant certification status</td>
<td></td>
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<tr>
<td>IBE</td>
<td>838 (5.4)</td>
<td>303 (3.9)</td>
<td>429 (4.2)</td>
<td>1,570 (4.7)</td>
</tr>
<tr>
<td>IBP</td>
<td>4,806 (30.6)</td>
<td>1,723 (21.9)</td>
<td>2,111 (21.1)</td>
<td>8,640 (25.7)</td>
</tr>
<tr>
<td>IFF</td>
<td>10,047 (64.0)</td>
<td>5,837 (74.2)</td>
<td>7,488 (74.7)</td>
<td>23,372 (69.6)</td>
</tr>
<tr>
<td>Breastfeeding initiation</td>
<td></td>
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</tr>
<tr>
<td>Yes (%)</td>
<td>9,668 (61.6)</td>
<td>4,280 (54.4)</td>
<td>4,771 (47.6)</td>
<td>18,719 (55.7)</td>
</tr>
<tr>
<td>Breastfeeding stopped before certification</td>
<td></td>
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</tr>
<tr>
<td>Minimal (1–2 times/day)</td>
<td>1,493 (96.6)</td>
<td>852 (97.6)</td>
<td>838 (97.4)</td>
<td>3,183 (97.1)</td>
</tr>
<tr>
<td>Partial (≥3 times/day)</td>
<td>40 (2.6)</td>
<td>16 (1.8)</td>
<td>17 (2.0)</td>
<td>73 (2.2)</td>
</tr>
<tr>
<td>Maximal (breastmilk only)</td>
<td>12 (0.8)</td>
<td>5 (0.6)</td>
<td>5 (0.6)</td>
<td>22 (0.7)</td>
</tr>
<tr>
<td>Breastfeeding duration (days)a</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>All [mean (SD)]</td>
<td>38.67 (47.78)</td>
<td>42.30 (50.82)</td>
<td>38.18 (49.83)</td>
<td>39.38 (49.04)</td>
</tr>
<tr>
<td>All (median)</td>
<td>20</td>
<td>25</td>
<td>21</td>
<td>21</td>
</tr>
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</table>

aComputation excludes non-initiators.
IBE, infant breastfeeding exclusively; IBP, infant breastfeeding partially; IFF, infant fully formula-fed.
breastfeeding but terminated prior to WIC certification, so we know only that duration was shorter than the time period between birth and certification. However, there were no statistically significant differences in demographic data between those with breastfeeding duration data and those without.

The IBCLC credential appears as an added benefit to the local agency, but no protocols exist to assure interaction between all pregnant and breastfeeding women and the IBCLC. IBCLCs employed by the Maryland WIC Program who are not supervising peer counselors do not necessarily have focused time for breastfeeding support. They often are hired to do another job (such as that of a nutritionist).

Conclusions

Implications for public practice

This short window of opportunity is a critical time for establishing infant feeding patterns that will have impact for a lifetime. Successful long-term breastfeeding depends upon a successful start. Providing a successful path for infant feeding to new mothers requires a multipronged approach that includes public health, obstetric, and maternity care stakeholders. This article exposes gaps in healthcare support and an uncoordinated system of prenatal, hospital, and postnatal health services. Specifically, communication mechanisms and standards for guidance for infant feeding are needed for all care providers. Currently, new breastfeeding mothers are required to navigate a complex system involving compartmentalization of health services and multiple players during a vulnerable period in which they are often exhausted. All healthcare providers, including hospital staff, physicians, WIC employees, lactation consultants, nurses, La Leche League leaders, and doulas, should coordinate efforts in order to form a network of support a mother can access from the time of her last WIC visit prior to birth until her post-delivery WIC certification. Additional levels of training for various groups may be necessary in order to provide mothers with the support and anticipatory guidance they need during this window of opportunity for breastfeeding success.

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Disclosure Statement

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References

