

Breastfeeding Is Associated With Higher Retention in WIC After Age 1

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ABSTRACT

Objective: Examine factors associated with retention on the *Special Supplemental Nutrition Program for Women, Infants, and Children* (WIC) after 1 year of age.

Setting: A large California WIC program.

Participants: WIC participants 14 months old (9,632) between July and September, 2016.

Main Outcome Measure: Recertification in WIC by 14 months of age.

Analysis: Multivariate logistic regression was performed and odds ratios (ORs) and 95% confidence intervals (CIs) were computed to examine factors associated with child retention in WIC at age 14 months.

Results: Mothers performing any amount of breastfeeding from 6 to 12 months were more likely than mothers not breastfeeding to recertify their children in WIC at age 14 months. The odds of retention for children fully breastfed from 6 to 12 months was about 3 times higher than for fully formula-fed children (95% CI, 2.46–3.59). The odds of retention for mostly breastfed children and children fed some breast milk but mostly formula were 1.95 (95% CI, 1.57–2.43) and 1.72 (95% CI, 1.41–2.10) times higher than fully formula-fed children. Prenatal intention to breastfeed (OR = 1.34; 95% CI, 1.16–1.55), online education (OR = 1.08; 95% CI, 1.03–1.13), missing benefits (OR = 0.19; 95% CI, 0.17–0.21), underredemption of WIC benefits (OR = 0.51, 95% CI, 0.45–0.58), early enrollment in WIC (OR = 1.11; 95% CI, 1.09–1.14), number of family members receiving WIC (OR = 1.29, 95% CI, 1.14–1.46), English language preference (OR, 0.55; 95% CI, 0.47–0.64), and participation in *Medicaid* (OR = 1.29; 95% CI, 1.14–1.47) were also associated with retention.

Conclusions and Implications: Results from this study suggested there are a number of areas WIC programs may target to promote ongoing participation in the program. These include support for both breastfeeding and non-breastfeeding women, technology-based strategies, and targeted outreach to pregnant women, participants who have missed benefits, and participants who have not redeemed their benefits. Research that examines the impact of targeted interventions directed at ≥ 1 of these areas is essential to help WIC programs maintain contact with children into early childhood.

Key Words: breastfeeding, nutrition education, program retention, WIC (*J Nutr Educ Behav.* 2017; ■:1-7.)

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INTRODUCTION

The *Special Supplemental Nutrition Program for Women, Infants, and Children* (WIC) provides a critical safety net

for women and children who are nutritionally at-risk during the developmentally vulnerable life stages of pregnancy, postpartum, infancy, and early childhood.^{1,2} By serving more

than half of all infants in the US and one quarter of children aged 1–5 years,² WIC is well positioned to reach low-income children at greatest risk for poor health outcomes. The program promotes nutritious eating by providing healthy foods^{3,4} (referred to as the WIC food package) paired with nutrition education⁵⁻⁷ and referrals to health and social services.² In addition, WIC provides breastfeeding support that starts prenatally to bolster a woman's intention to breastfeed. This education and support continues postpartum, and additional foods are issued to breastfeeding women to meet their higher nutrient needs. Mothers who are fully or mostly breastfeeding receive additional food for themselves and

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continue to receive WIC foods through the infant's first birthday. Non-breastfeeding women and women only partially breastfeeding receive food for themselves for 6 months postpartum. The WIC benefits are issued monthly and typically start prenatally when a mother enrolls in the program. As long as the family remains eligible for income ($\leq 185\%$ of the federal poverty level [FPL]) and the child continues to have a nutrition risk, children may stay enrolled in the program until their fifth birthday.

Despite the health benefits observed in young children served by WIC, such as improved birth outcomes⁸ and improved diet quality,³ WIC participation dramatically declines as children turn 1 year old.⁹ An Economic Research Service report found that of the 79% of eligible families participating in WIC nationally within the first year of their infant's life, 23% exited the program when the infant turned 1 year old.⁹ To date, the few published studies on why families exit the program suggest that reasons for leaving the program vary. In a study by Jackowitz and Tiehen,¹⁰ households in which the mother never breastfed and those in which the mother did so for < 6 months were less likely to remain enrolled in WIC when the child turned 1 year old than were households in which the mother breastfed for ≥ 6 months. Other reasons for leaving the program, although not necessarily specific to children turning 1 year old, included logistical barriers such as job conflicts, transportation problems, waiting too long at WIC appointments, and difficulties in bringing the infant or child to recertify.^{11,12}

The objective of this study was to assess characteristics of WIC participants that are associated with program continuation after 1 year of age. It was hypothesized that, because of the additional support and longer-term benefits received by breastfeeding women compared with formula-feeding women (eg, receiving food for 12 instead of 6 months), breastfeeding during the first year would be associated with ongoing participation in WIC. It was also hypothesized that nutrition education and outreach strategies conducted by WIC would be associated with higher rates of reten-

tion. Demographic factors such as income, education, and language preference were also expected to be associated with program retention, as were participant patterns of program use (eg, regular use of WIC benefits, number of household members receiving WIC). Research on factors associated with WIC retention can inform and focus WIC outreach efforts and enhance retention strategies so that vulnerable populations can continue to receive nutritional benefits and experience improved health and nutritional outcomes.^{3,8}

METHODS

Study Sample

Public Health Foundation Enterprises (PHFE) WIC is the largest local agency WIC program in the country, serving over 200,000 participants monthly across 53 sites in Los Angeles, Orange, and San Bernardino counties in California. All PHFE WIC participant administrative data are entered by WIC staff into the California WIC Administrative Database. This database captures participant demographic data as well as information on the issuance of WIC food packages. The California Health and Human Services Agency Institutional Review Board reviewed this study and determined it to be exempt owing to the use of existing administrative data with no confidential client information.

The data used in this study were captured from administrative data of PHFE WIC participants. With this study's focus on WIC recertification at age 1 year, all infants turning 14 months old between July and September, 2016 and receiving WIC benefits for at least 1 month between age 7 and 12 months were extracted from the data set. Selecting age 14 months instead of age 12 or 13 months ensured that infants who may have been delayed in the recertification process were appropriately counted as recertified. Of the 12,199 infants who turned 14 months in the selected time window, 2,567 were excluded from the analytic sample for at least 1 of the following reasons: 1,828 received no WIC benefits from ages 7 to 12 months; 1,440 were issued therapeutic formula for

at least 1 month and thus were receiving benefits from WIC not typical of usual services; 335 were born at ≤ 35 weeks; 290 were twins; 190 were foster infants; and 64 had incomplete enrollment records. The final analytical sample included 9,632 WIC participants.

Study Variables

Recertification in WIC by age 14 months. The outcome variable was recertification in WIC by age 14 months (coded as yes/no). Infants were typically enrolled into PHFE WIC between birth and age 6 weeks and remained certified for 1 year. After age 1, children must be recertified to receive a food package appropriate for their age. The recertification process required the child to be present and for the caregiver to provide identification, proof of income, and proof of address.

Amount of breastfeeding. Because WIC food package issuance could change monthly as feeding practices changed, infants were categorized into 1 of 4 categories representing the amount of breastfeeding: fully breastfeeding, mostly breastfeeding, mixed feeding, and formula feeding. These 4 categories were intended to capture the variety of doses of breastfeeding and were based on the issuance of the fully breastfeeding, mostly breastfeeding, and formula feeding WIC food packages from 6 to 12 months (Table 1).¹³ Whaley et al¹⁴ validated the use of the WIC postpartum woman/infant food packages as a proxy for breastfeeding behavior. They found issuance of food packages from 6 to 12 months to have the highest validity, most likely owing to changes in feeding practices that happen in the early months postpartum. Therefore, this study focused on the period of food package issuance from 6 to 12 months postpartum.

Prenatal intention to breastfeed. Prenatal intention to breastfeed (coded as yes/no) was documented by WIC staff following a standardized protocol for prenatal women that involved assessing intention to breastfeed at each trimester appointment. The mother's intention at the latest point

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