Georgia's Breastfeeding Promotion Program for Low-Income Women
Indu B. Ahluwalia, Irene Tessaro, Laurence M. Grummer-Strawn, Carol MacGowan
and Sandra Benton-Davis

*Pediatrics* 2000;105:85-
DOI: 10.1542/peds.105.6.e85

This information is current as of November 18, 2005

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://www.pediatrics.org/cgi/content/full/105/6/e85
Georgia’s Breastfeeding Promotion Program for Low-Income Women

Indu B. Ahluwalia, MPH, PhD; Irene Tessaro, DrPH; Laurence M. Grummer-Strawn, PhD; Carol MacGowan, MPH; and Sandra Benton-Davis, RD

ABSTRACT. Objective. Beginning in 1990, Georgia’s Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) initiated 5 new strategies to promote breastfeeding among its pregnant and postpartum clients. These strategies were implemented in 1991, each to be provided as an addition to its standard program of counseling on breastfeeding and distributing appropriate literature: 1) enhanced breastfeeding education, 2) breast pump loans, 3) hospital-based programs, 4) peer counseling, and 5) community coalitions. The enhanced breastfeeding education strategy provides access to a hotline as well as periodic training of staff; and the breast pump loan provides free breast pumps to mothers who want to use them. The hospital-based strategy provides bedside support and counseling to women who have just given birth and includes staff training, as well as a hotline number for women to call after they leave the hospital. The peer-counseling strategy focuses on identifying former WIC participants who have successfully breastfed their infants; these women are recruited to provide support and encouragement to current WIC participants. Finally, the community coalitions approach is designed to identify existing community attitudes about breastfeeding, establish plans to address gaps in breastfeeding services, to develop resource guides on breastfeeding for the community, and to advocate at the community level to support breastfeeding women. The objective of our research was to evaluate the impact of breastfeeding promotion strategies on breastfeeding initiation among WIC participants in Georgia.

Methods. Using data from the Pregnancy Nutrition Surveillance System (PNSS) for 1992–1996, we examined breastfeeding initiation rate during this period and compared rates among 6 different intervention strategies. Also, we used data from the Pregnancy Risk Assessment Monitoring System (PRAMS) to assess breastfeeding initiation and duration among WIC enrollees. We conducted 13 focus groups to understand the experiences of program participants. Ten focus groups were conducted with women who were breastfeeding their infants, 3 each with women from the community coalitions, hospital-based programs, and standard education programs, and 1 with women from the breast pump loan program. Three focus groups were conducted with women who were feeding their infants formula.

Results. PNSS data show that breastfeeding initiation increased in the Georgia WIC program from 31.6% in 1992 to 39.5% in 1996. PRAMS data confirmed the increase in breastfeeding initiation from 33.6% (standard error [SE]: 2.2) in 1993 to 42.1% (SE: 2.4) in 1996 among WIC participants. Both datasets (PRAMS and PNSS) showed breastfeeding initiation to be well below the year 2000 goal of 75%. Overall, PRAMS data show a high breastfeeding initiation among non-WIC participants (range: 64.7% [SE: 2.2]) for 1994 to 70.1% (SE: 2.2) in 1996. The percent change between 1993 and 1996 was 8% for non-WIC participants, and it was 25% for the WIC participants among those responding to the PRAMS questionnaire. Data from PRAMS indicated no statistical change in the percentage of WIC enrollees who breastfed their infants for 8 weeks or more; this estimate was 18.3% (95% confidence interval (CI): 14.9–21.8) in 1993 and 19.4% (95% CI: 15.7–23.2) in 1996, well below the Healthy People 2000 objective of 50% at 6 months.

According to PNSS data, the largest increases in breastfeeding initiation for 1992 to 1996 were among younger women (≤19 and 20–24 years old), those with no college (less than high school and high school only), unmarried, and black women (see Table 1). The smallest increases during this period were among older women (30+), those with more than a high school education, and women who were white, Hispanic, or from other ethnic or racial groups. The PRAMS data (1993–1996) generally display similar results, but the pattern by marital status demonstrated larger increases for married women than for unmarried women. Most programs demonstrated an increase in the breastfeeding initiation from 1992 to 1996. The breast pump loan program had the highest initiation rate (55.6%) in 1992, and the hospital-based program had the highest initiation rate (52.2%) in 1996. In 1996, 4 of the 6 strategies had an initiation rate over 40%. Women in the hospital-based program had a larger change in breastfeeding initiation (75%) than did women in the other 5 programs (see Table 2). The breast pump loan program was the only 1 of the 6 programs associated with a decrease (11.2%), but this group had the highest rate in 1992 (55.6%) and one of the highest rates in 1996 (49.4%).

Focus group interviewees said they benefited from breastfeeding promotion services and the assistance provided by lactation consultants. Very few participants said that they did not want to breastfeed, most recognized the benefits of breastfeeding, but many could not overcome the barriers they experienced. Focus group participants also described receiving inconsistent advice from WIC staff, their own pediatricians, or other health personnel. Many women believed they lacked important information, such as how and when to introduce supplements.
health benefits of breastfeeding have been documented by a number of studies, breastfed infants have fewer illness episodes overall and experience fewer episodes of infectious illnesses, such as otitis media, upper respiratory infections, and gastrointestinal illnesses. In addition, breastfeeding increases the infant–mother bond, reduces or eliminates the cost of purchasing formula, and yields health care savings by reducing illness events. In the United States, a study of the breastfeeding promotion program in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) found that breastfeeding was a cost-effective strategy for the Medicaid program. Despite its numerous benefits, the rates of breastfeeding in the United States have often remained low among the low-income groups. For example, the national declines of the 1980s were followed by an overall increase in the 1990s, but in both periods, breastfeeding rates were lower among those with low incomes.

To increase breastfeeding among low-income women, the WIC Reauthorization Act of 1988 mandated activities to promote breastfeeding for pregnant and lactating mothers attending WIC clinics. Already, a variety of breastfeeding promotion and support programs have been evaluated by state WIC programs, evaluations have shown that interventions conducted prenatally often increase the incidence and duration of breastfeeding, while changing women’s attitudes and enhancing their knowledge about the benefits of breastfeeding their infants.

In their 1987 study of WIC clinics in Georgia, MacGowan and colleagues found that in the previous year only 24% of WIC enrollees had initiated breastfeeding after delivery and just 6% had continued for 6 months or more. In response to such reports, the Georgia WIC program planned a number of breastfeeding promotion efforts at its 21 WIC sites. Beginning in 1990, it initiated 5 new strategies that were implemented in 1991, each to be provided as an addition to its standard program of counseling on breastfeeding and handing out appropriate literature. The 5 new strategies were 1) enhanced breastfeeding education, 2) breast pump loans, 3) hospital-based programs, 4) peer counseling, and 5) community coalitions. The enhanced breastfeeding education strategy provides access to a hotline as well as periodic training of staff, and the breast pump loan strategy provides free breast pumps to mothers who want to use them. The hospital-based strategy provides bedside support and counseling to women who have just given birth and includes staff training, as well as a hotline number for women to call after they leave the hospital. The peer-counseling strategy focuses on identifying former WIC participants who have successfully breastfed their infants; these women are recruited to provide support and encouragement to current WIC participants. Finally, the community coalitions approach is designed to identify existing community attitudes about breastfeeding, establish plans to address gaps in breastfeeding services, develop resource guides on breastfeeding for the community, and advocate at the community level to support breastfeeding women.

In the present evaluation, we examine changes in breastfeeding patterns in Georgia from 1992 to 1996 and assess the potential impact of the various breastfeeding programs in Georgia using multiple sources of data. We compare levels of breastfeeding initiation with the Healthy People 2000 objectives of 75% for the early postpartum period and the proportion of women still breastfeeding at 8 weeks with the Healthy People 2000 objective of 50% for breastfeeding at 6 months.

METHODS

We used 3 major sources of data for this analysis: 1) the Pregnancy Risk Assessment Monitoring System (PRAMS) of the Centers for Disease Control and Prevention (CDC), which provided population level survey data; 2) the Pregnancy Nutrition Surveillance System (PNSS) of the CDC, which provided program data; and 3) focus groups of women who breastfed and those who did not.

PRAMS Data

PRAMS collects information in 18 states on maternal behaviors and experiences before, during, and after pregnancy, including participation in WIC, by surveying women 2 to 6 months after delivery. In Georgia, a stratified, random sample of ~200 mothers of newborns is selected from birth certificates and a survey questionnaire is mailed. If 3 attempts to contact the mother by mail are unsuccessful, she is telephoned for an interview. The survey questionnaire is linked to the birth certificate of infants born in Georgia, and specific items from the birth certificate are included in the PRAMS analysis dataset. The data are statistically weighted to adjust for the survey design and for noncoverage and nonresponse. In this analysis, we used PRAMS data for 1993–1996 to examine trends in breastfeeding initiation and duration among Georgia WIC enrollees. Initiation was defined as ever having breastfed the infant. We also examined the proportion of mothers who breastfed at least 8 weeks. In all, 3724 women were included in this analysis. We used SUDAAN software to analyze data (Research Triangle Park, NC).
cause data collection is not associated with any program or benefits, it provides an unbiased estimate of statewide breastfeeding initiation and duration. Unfortunately, we could not generate strategy-specific estimates from PRAMS data because the PRAMS questionnaire does not collect the type of breastfeeding program to which women in WIC are exposed.

**PNSS Data**

PNSS collects prenatal and postpartum information on women and their infants who are enrolled in public health clinics, particularly WIC. Data on health status and behaviors before and after delivery are extracted from program management information systems. Data on breastfeeding status are ascertained at the first postpartum visit to WIC. For this analysis, Georgia PNSS data for 1992–1996 were used to examine changes in breastfeeding initiation by type of breastfeeding program in WIC. Enrollees in the standard program totaled 184 238; other totals were 39 293 for the enhanced program; 20 801, breast pump loan program; 12 283, peer-counseling program; 34 923, hospital-based program; and 10 191 community coalitions program. Data on breastfeeding initiation were available for 158 495 or 52% of the women; 48% missing data could bias the results. Also, because women who receive formula from the WIC program may underreport their breastfeeding if they think their WIC benefits would be reduced because of this behavior, the possibility of biased reporting must be considered. We used SAS software (Cary, NC) to analyze the PNSS data.25

**Focus Group Data**

To gain an inside view of women's decisions to breastfeed or bottle-feed, we conducted focus group interviews of WIC participants from multiple settings where breastfeeding promotion strategies were implemented. A total of 107 women participated in 13 focus groups and 2 individual interviews were also conducted. Ten focus groups were conducted with women who were breast-feeding their infants, 3 each with women from the community coalitions, hospital-based, and standard education programs, and 1 with women from breast pump loan program. Three focus groups and the 2 individual interviews were conducted with women who were feeding their infants formula.

**RESULTS**

The initiation of breastfeeding dropped from 1992 to 1993 among WIC program participants (per PNSS; PRAMS data were not available), then increased from 1993 to 1996 per both data sources (Fig 1). PRAMS estimates were higher than those from PNSS, which may indicate some underreporting by WIC participants providing information to the PNSS data collection system. Both datasets showed breastfeeding initiation to be well below the year 2000 goal of 75%. Overall, PRAMS data show a high breastfeeding initiation among non-WIC participants (range: 64.7%; standard error [SE]: 2.2 in 1994 to 70.1%; SE: 2.2 in 1996). The percent change between 1993 and 1996 was 8% for non-WIC participants and it was 25% for the WIC participants among those responding to the PRAMS questionnaire. Data from PRAMS indicated no statistical change in the percentage of WIC enrollees who breastfed their infants for 8 weeks or more; this estimate was 18.3% (95% confidence interval [CI]: 14.9–21.8) in 1993 and 19.4% (95% CI: 15.7–23.2) in 1996, well below the Healthy People 2000 objective of 50% at 6 months.

According to PNSS data, the largest increases in breastfeeding initiation for 1992 to 1996 were among younger women (≤19 and 20–24 years old), those with no college (less than high school and high school only), unmarried, and black women (Table 1). The smallest increases during this period were among older women (≥30), those with more than a high school education, and women who were white, Hispanic, or from other ethnic or racial groups. The PRAMS data (1993–1996) generally display similar results, but the pattern by marital status demonstrated larger increases for married women than for unmarried women.

**Breastfeeding Initiation and WIC Program Type**

Most programs demonstrated an increase in the breastfeeding initiation from 1992 to 1996. The breast pump loan program had the highest initiation rate (55.6%) in 1992 and the hospital-based program had the highest initiation rate (52.2%) in 1996. In 1996, 4 of the 6 strategies had an initiation rate over 40%. Women in the hospital-based program had a larger change in breastfeeding initiation (75%) than did women in the other 5 programs (Table 2). The breast pump loan program was the only 1 of the 6 programs associated with a decrease of 11.2%, but this group had the highest rate in 1992 and one of the highest rates in 1996.

**Reactions Among WIC Participants**

Women in all the focus groups indicated they had received strong encouragement from WIC staff regarding breastfeeding. Discussions revealed that women had learned about the benefits of breastfeeding, had learned specific skills, and had received advice from the lactation consultants and nutritionists as well as their peers. In addition to individual people, the hotline staffed by WIC personnel was cited as a provider of information and support. A few women found the prenatal breastfeeding classes and the reading materials to be helpful in deciding whether to breastfeed; a larger number found them helpful in reinforcing their feeding decisions. Many women mentioned turning to lactation consultants and WIC breastfeeding coordinators for help with breastfeeding; these persons were viewed as particularly helpful in addressing problems and concerns once women had decided to breastfeed.

“I got a lot of the little booklets and stuff from here [WIC office], and she [nutritionist] gave me a lot of information, and that helped me a lot. I mean, it didn’t make me decide to nurse because I was already going to, but it helped me a lot.”

![Fig 1. Initiation of breastfeeding among WIC participants: Georgia, 1992–1996.](http://www.pediatrics.org/cgi/content/full/105/6/e85)
It made me a little more confident once I had him. I knew what I was doing.

“You know when you first breastfeed, you don’t know anything—nobody’s there to help you. I thought I was doing everything wrong. I was like maybe she’s latching on wrong. Maybe my nipples are cracking, I don’t know. It is so hard. I didn’t know what was going on. So she [lactation consultant] came to my house, and she watched me.”

Many women, however, believed that the messages about infant feeding from WIC staff were biased toward breastfeeding, with little attention to bottle-feeding.

“It was, you know, almost forced, but it was like, like she [another participant] said, you felt like you were being treated like dirt if you would even think about giving a bottle.”

It made me a little more confident once I had him. I knew what I was doing.”

“You know when you first breastfeed, you don’t know anything—nobody’s there to help you. I thought I was doing everything wrong. I was like maybe she’s latching on wrong. Maybe my nipples are cracking, I don’t know. It is so hard. I didn’t know what was going on. So she [lactation consultant] came to my house, and she watched me.”

Many women, however, believed that the messages about infant feeding from WIC staff were biased toward breastfeeding, with little attention to bottle-feeding.

“It was, you know, almost forced, but it was like, like she [another participant] said, you felt like you were being treated like dirt if you would even think about giving a bottle.”

Focus group participants also described receiving inconsistent advice from WIC staff, their own pediatricians, or other health personnel. Many women believed they lacked important information, such as how and when to introduce supplements, what they should be eating, and the effects of specific foods on the infant.

“The doctor’s office told me to give her pear juice or apple juice. Then the nutritionist said no, no, you don’t need to be giving her that. So you’re getting conflicting stuff from everywhere, and you’re just like here—hey, what do I do because nobody agrees. So you kind of do what works best for your child.”

Very few respondents said they did not want to breastfeed. Many of the bottle-feeding mothers had wanted to breastfeed but could not overcome the difficulties or barriers they confronted. They recognized the benefits of breastfeeding, but they did not start or started but discontinued breastfeeding for a variety of reasons, including lack of perceived convenience, pain, employment, lack of support from significant others, and not feeling comfortable nursing in public. Women also mentioned having a hard time getting started and lacking the confidence to keep going. These women also mentioned that hospital personnel were not very helpful or supportive when they were trying to breastfeed.

Several women expressed concerns about clinic operations they thought interfered with breastfeed-ing support. For example, some women mentioned that WIC scheduling took too long and that they had to wait a long time. Some women thought that WIC needed to hire more staff because clinics were so short-staffed that some staff were rude and burned out.

“I really think that a way to get more women to do it (breastfeed) would be to get someone in here that is not burnt out, someone that wants women to do it wholeheartedly and are not just reading from a piece of paper.”

Women also suggested that women participating in WIC could be helped to breastfeed if their family members, including husbands, became involved and if support groups were formed of experienced mothers.

| TABLE 1. Initiation of Breastfeeding by Maternal Characteristic Among WIC Participants Using PNSS and PRAMS: Georgia |
|-----------------|----------------|----------------|-----------------|-----------------|
| Characteristic  | PNSS 1992 (%) | PNSS 1996 (%) | PRAMS WIC Sample 1993 (%) | PRAMS WIC Sample 1996 (%) |
| Age (y)         |                |                |                            |                            |
| ≤19             | 19.1           | 28.8           | 24.1 (3.8)                 | 34.0 (4.4)                 |
| 20–24           | 31.7           | 37.8           | 38.5 (3.7)                 | 41.7 (3.9)                 |
| 25–29           | 39.5           | 44.1           | 33.8 (4.9)                 | 47.4 (5.5)                 |
| 30+             | 45.1           | 44.1           | 38.8 (5.9)                 | 46.3 (6.9)                 |
| Education       |                |                |                            |                            |
| Less than high school | 25.9 | 30.1 | 24.3 (3.5) | 32.8 (4.3) |
| High school     | 30.0           | 36.6           | 33.8 (3.2)                 | 41.4 (3.6)                 |
| More than high school | 61.5 | 54.5 | 59.4 (5.0) | 59.3 (4.4) |
| Marital status  |                |                |                            |                            |
| Married         | 41.8           | 48.1           | 40.9 (3.7)                 | 58.9 (3.9)                 |
| Not married     | 25.4           | 30.5           | 28.6 (2.6)                 | 29.6 (2.7)                 |
| Parity          |                |                |                            |                            |
| First child     | —              | —              | 36.4 (3.3)                 | 42.3 (3.2)                 |
| >1 child        | —              | —              | 34.8 (4.3)                 | 45.7 (5.1)                 |
| Maternal race   |                |                |                            |                            |
| Black           | 20.8           | 27.9           | 31.2 (2.3)                 | 37.5 (2.4)                 |
| Hispanic        | 60.9           | 65.8           | —                          | —                            |
| Other           | 47.7           | 51.0           | 97.9 (2.2)†                | 98.0 (1.2)†                |
| White           | 40.2           | 42.7           | 35.3 (3.8)                 | 37.8 (4.2)                 |
| Total           | 31.6           | 39.5           | 33.6 (2.2)                 | 42.1 (2.4)                 |

Percent change was calculated using the formula ([% 1992 – % 1996]/% 1992)*100 for the PNSS data (for PRAMS the base–year was 1993).

* Unweighted sample sizes.

† Sample size <25.

| TABLE 2. Initiation of Breastfeeding Among WIC Participants by Type of WIC Program: 1992 and 1996, Georgia |
|-----------------|----------------|-----------------|-----------------|-----------------|
| Program Type    | 1992 (%)       | 1996 (%)        | Change (%)      |
| Standard        | 29.8           | 33.4           | 12.1            |
| Enhanced        | 33.0           | 41.0           | 24.2            |
| Breast pump loan| 55.6           | 49.4           | -11.2           |
| Peer counseling  | 39.5           | 50.4           | 27.6            |
| Hospital-based  | 29.8           | 52.2           | 75.2            |
| Community coalitions | 24.0 | 30.4 | 26.7 |
| Total           | 31.6           | 39.5           | 25.0            |
“I wish that I would have continued [breastfeeding]. And probably being in a group like this [focus group with other WIC participants], I probably would still be doing it [breastfeeding]. But I just didn’t have a whole lot of support. I needed some extra support during that time.”

From the discussion groups we were not able to differentiate the individual effects of the strategies employed by the programs. Clearly, however, participants viewed programs with staff dedicated to breastfeeding education and support as valuable sources of support and information. For example, numerous women from the hospital-based sites mentioned the availability and usefulness of the lactation consultant in teaching them the skills of latching on correctly immediately after their infant was born and giving them other support as they struggled with breastfeeding their new infant.

DISCUSSION

Our findings show an increase in breastfeeding initiation among WIC participants in Georgia from 1992 to 1996, but breastfeeding duration at 8 weeks was essentially the same from 1993 to 1996. We also found differences in breastfeeding rates by type of program in both 1992 and 1996, with the expanded programs, in most cases, outperforming the standard program. In addition, we found that increases from 1992 to 1996 in the proportion of women who initiated breastfeeding were higher in the expanded programs. The most successful strategies seem to include the enhanced, breast pump loan, peer-counseling, and hospital-based programs with the hospital-based strategy showing the most positive change from 1992 to 1996. The strategy with the largest increase is the hospital-based intervention, in which bedside counseling or assistance is offered to women shortly after delivery. Women who receive prenatal counseling on breastfeeding, which is the case in all 6 programs examined, may benefit from the classes, literature, and personal interaction with the lactation/nutrition staff, but the addition of bedside counseling may provide important additional practical advice and skills in the early postpartum period that are helpful to mothers as they learn to feed their new infant. Prenatal breastfeeding education strategies may affect women’s breastfeeding intentions, but strategies focusing on the early postpartum period can assist women in executing those intentions. Thus, the availability of postpartum support can reinforce a woman’s decision to breastfeed while supporting her through difficulties.

Our findings that the rate of breastfeeding initiation in Georgia WIC clinic participants rose from the 24% reported by McGowan and colleagues21 for 1987 and from an overall estimate of 31.6% in 1992 is consistent with previous findings that breastfeeding education and support is associated with an increase in breastfeeding initiation among low-income women.19-20 In Georgia, the increase in breastfeeding initiation may in part be attributed to the efforts of the WIC program in developing and implementing a variety of intervention strategies. As women mentioned during the focus groups, they benefit from the WIC efforts. Especially, education and support offered by the lactation specialist, prenatal education, and ongoing postpartum support may be critical to the successful initiation and continuation of breastfeeding. In addition, continuous contact with lactation specialists and nutritionists may help women to develop the skills needed to breastfeed, to clarify issues for them, and to answer their questions or overcome societal and familial barriers.18,26

This study has several limitations. First, in the PNSS data, a high percentage of women were missing information on the initiation of breastfeeding. However, we examined the missing values for this variable by several demographic characteristics and found no substantive differences in the proportion missing across groups. The fact that for breastfeeding initiation the PRAMS data showed a similar trend provides some evidence that PNSS was not systematically biased, because we know of no such bias in PRAMS. Second, the PRAMS questionnaire does not collect data on the type of breastfeeding program to which women are exposed. Third, the results of the focus groups did not provide sufficient information on the various breastfeeding support strategies to make comparisons between them. Finally, the focus group results cannot be generalized to all WIC participants in Georgia.

It seems that interventions by the Georgia WIC program to promote breastfeeding among low-income women have been successful, as seen by the increases in breastfeeding initiation between 1987 and 1996. The best of the expanded breastfeeding promotion programs seem to be the ones that go beyond the standard education strategies and individualize education and support services, to the extent possible, offered through the interventions. Even though gains observed in breastfeeding initiation among WIC participants are encouraging, we should be aware that rates are still low. Furthermore, program planners and health service providers to women and children should be aware that mothers need consistent messages about infant feeding and the introduction of supplemental foods. WIC programs in Georgia and service providers should find our study findings useful in developing breastfeeding promotion strategies or in refining existing strategies to provide the information, support, and advice that pregnant and postpartum women need to make the most informed and thoughtful decisions about how to feed their infants.

ACKNOWLEDGMENTS

We thank the WIC Program staff in Georgia for their contributions to this study. We also thank the focus group participants who shared their insights about the use of WIC breastfeeding promotion and support programs.

REFERENCES

4. Cunningham A, Jelliffe DB, Jelliffe EFP. Breastfeeding and health in the

http://www.pediatrics.org/cgi/content/full/105/6/e85


Georgia's Breastfeeding Promotion Program for Low-Income Women
Indu B. Ahluwalia, Irene Tessaro, Laurence M. Grummer-Strawn, Carol MacGowan and Sandra Benton-Davis

*Pediatrics* 2000;105;85-
DOI: 10.1542/peds.105.6.e85

This information is current as of November 18, 2005

| Updated Information & Services | including high-resolution figures, can be found at: http://www.pediatrics.org/cgi/content/full/105/6/e85 |
| References | This article cites 21 articles, 10 of which you can access for free at: http://www.pediatrics.org/cgi/content/full/105/6/e85#BIBL |
| Citations | This article has been cited by 2 HighWire-hosted articles: http://www.pediatrics.org/cgi/content/full/105/6/e85#otherarticles |
| Subspecialty Collections | This article, along with others on similar topics, appears in the following collection(s): Nutrition & Metabolism http://www.pediatrics.org/cgi/collection/nutrition_and_metabolism |
| Permissions & Licensing | Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: http://www.pediatrics.org/misc/Permissions.shtml |
| Reprints | Information about ordering reprints can be found online: http://www.pediatrics.org/misc/reprints.shtml |