



RECENT NEWS ON THE SPECIAL SUPPLEMENTAL NUTRITION PROGRAM FOR WOMEN, INFANTS AND CHILDREN (WIC)

The COVID-19 pandemic has rocked the global community to its core. The United States (U.S.) has suffered exponential losses for myriad of reasons, including policy failures and cultural conflicts. As with our global neighbors, many U.S. families have lost loved ones, livelihoods, and shelter, challenging their health, nutritional, and emotional stability. Among the programs that have remained steadfast in their support as a social safety net, is the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

WIC has been providing healthy food, breastfeeding support, referrals to health and social services, and nutrition education to income qualified families in the U.S. with nutritional needs for over 40 years. Administered by the United States Department of Agriculture (USDA) and implemented through 10,000 WIC agencies and clinics, WIC serves over 6 million low-income mothers, babies, and young children aged between 1 and 5 years old. Rigorous evaluation have proven WIC the nation's premier public health nutrition program.

Throughout the COVID-19 pandemic, WIC agencies nationwide worked tirelessly to implement flexibilities to various aspects of the program including substitution flexibilities to the food package so that families could continue to receive their food benefits despite periodic shortages of items in some local or regional groceries such as bread, milk and eggs. The non-profit education arm and advocacy voice of the WIC program, the National WIC Association (NWA), played a critical role stepping into a policy void, leading advocacy efforts for these flexibilities, and organizing COVID-19 workgroups to support WIC stakeholders as they navigate the challenges presented by COVID-19.

WIC's food package is a cornerstone of the program and is reviewed at least every 10 years as mandated by the Healthy Hunger Free Kids Act (2010) to ensure

it's based on the most current scientific evidence, aligns with the Dietary Guidelines for Americans, and is culturally appropriate to the families WIC serves. It includes items such as milk, cheese, yoghurt, peanut butter, legumes, canned fish and whole grains and WIC participants receive their healthy food prescription on either an electronic benefit card or paper voucher. It also includes a cash value benefit (CVB) that can be spent exclusively on fruit and vegetables. In January 2017, the National Academies of Sciences, Engineering and Medicine (NASEM) published a ten year review of the WIC food package and recommended at NWA's encouragement, changes to enhance balance and choice for WIC participants. A key feature of the recommendations is increasing the amount of vegetables and fruit that families can access through WIC which currently allows between \$9 and \$11 depending on participant category. NASEM's report recommends increasing the CVV to a range of \$12 to \$35.

Recently, NWA promoted introduction of the bipartisan WIC Benefit Flexibility During COVID-19 Act, which would allow state agencies to temporarily increase the CVB to \$35. Sponsored by Reps. Kim Schrier (D-WA) and Ron Wright (R-TX), the bill was included in the HEROES Act which passed the House in mid-May and remains an advocacy priority for a final COVID package. NWA is committed to ensuring WIC participants nationwide have increased access to healthy foods, particularly fresh vegetables and fruit.

We are pleased to share with you three articles that further demonstrate the importance of research as a tool to continuously reflect on how WIC participants utilize their WIC food benefits.

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Changes in nutrient and food intakes among WIC participants

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In 2009, the composition and quantities of foods included in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) food package were revised to more closely align WIC benefits with dietary recommendations: **addition** of wholegrain products, fruit and vegetable cash-value vouchers, **reductions** in milk, cheese and juice allowances, and **restrictions** on milk fat content¹.

This cross-sectional study aims to use the National Health and Nutrition Examination Survey data (NHANES) to evaluate changes in nutrient and food intakes among children (n=1078, 24–59 months old) and women (n=1025, 19–50 years old) in households receiving WIC benefits before (2005–2008) vs. after implementation of the 2009 (2011–2014) food package revisions.

Changes in nutrient and food groups post-revision among children

The food package revisions were associated with an increased intake of fiber (10.6 g vs 11.6 g), vitamin E (4.3 mg vs 5.3 mg) and phosphorus (1040 mg vs 1100 mg) in children compared with the pre-revision sample. This greater fiber intake may be explained in part by increased consumption of whole grains (0.53 ounce-equiv. vs 0.82 ounce-equiv.) and legumes (0.05 cup-equiv. vs 0.08 cup-equiv.) that were also observed, as the 2009 food package revisions included more whole grains and a greater variety of protein foods such as beans and legumes. Also, a decreased intake of starchy vegetables (0.33 cup-equiv. vs 0.23 cup-equiv.) was observed in children.

This suggests that the increase in whole grain and legume varieties in the food package increased whole grain and legume consumption, which contributed to improved fiber intake.

Table 1: Dietary intake of children participating in the WIC program before and after the WIC food package revision.

Nutrient/food category	Pre-revision (n=569)	Post-revision (n=509)	P value (significance)
Nutrient to increase			
• Fiber (g)	10.6	11.6	0.004**
• Vitamin K (mg)	2104	2058	0.348
• Calcium (mg)	936	985	0.192
• Iron (mg)	11.8	11.8	0.948
• Zinc (mg)	8.6	8.1	0.061
Other nutrients of concern			
• Vitamin E (mg AR)	4.3	5.3	<0.001***
• Vitamin A (µg RAE)	547	562	0.510
• Phosphorus (mg)	1040	1100	0.012**
Priority food groups			
• Total vegetables (cup-equiv.)	0.71	0.65	0.307
• Total starchy vegetables (cup-equiv.)	0.33	0.23	0.042*
• Legumes computed as vegetables (cup-equiv.)	0.05	0.08	0.013*
• Whole grains (ounce-equiv.)	0.53	0.82	0.001**
• Total fruits (cup-equiv.)	1.7	1.6	0.788
• Total dairy (cup-equiv.)	2.15	2.12	0.869

*P<0.05; **P<0.01; ***P<0.01.

Changes in nutrient and food groups post-revision among women

Increased fiber intake was also observed for women (14.6 g vs 16.4 g) which may also be explained by increased consumption of whole grains (0.62 ounce-equiv. vs 0.89 ounce-equiv.) observed in post-revision even though it was not much significant.

Compared with the pre-revision sample, WIC women reported higher intake of sodium in post-revision (3096 mg vs 3342 mg).

Table 2: Dietary intake of women participating in the WIC program before and after the WIC food package revision.

Nutrient/food category	Pre-revision (n=537)	Post-revision (n=488)	P value (significance)
Nutrient to increase			
• Fiber (g)	14.6	16.4	0.013*
• Potassium (mg)	2303	2402	0.145
• Calcium (mg)	881	935	0.157
• Iron (mg)	14.4	14.1	0.642
• Folate (µg)	351	380	0.112
Nutrients to limit			
• Added sugars (tsp-equiv.)	21.1	17.8	0.068
• Saturated fat (%energy)	10.9	10.9	0.956
• Sodium (mg)	3096	3342	0.002**
Priority food groups			
• Total vegetables (cup-equiv.)	1.36	1.45	0.375
• Total starchy vegetables (cup-equiv.)	0.37	0.40	0.609
• Legumes computed as vegetables (cup-equiv.)	0.14	0.18	0.438
• Whole grains (ounce-equiv.)	0.62	0.89	0.087
• Total fruits (cup-equiv.)	0.91	1	0.672
• Total dairy (cup-equiv.)	1.53	1.69	0.334

*P<0.05; **P<0.01.

In conclusion, the package revisions were associated with an increased fiber and whole grain intakes for both children and women. Improved nutrient intakes among children (vitamin E and phosphorus) and a shift to more legumes and less starchy vegetables were reported. No change in total fruit, whole fruit or fruit juice consumption was observed although the revisions included an incentive to purchase fresh fruits via new cash-value vouchers. Recommendations to eliminate fruit juice and shift funds to the fresh cash-value vouchers^{2,3}, are important policy considerations for future package modifications.

Based on: Zimmer, M., & Vernarelli, J. (2019). Changes in nutrient and food group intakes among children and women participating in the Special Supplemental Nutrition Program for Women, Infants, and Children: Findings from the 2005–2008 and 2011–2014 National Health and Nutrition Examination Surveys. *Public Health Nutrition*, 22(18), 3309-3314.

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Longer WIC Participation Is Associated with Better Diet Quality in 24-Month-Old Children

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Research has shown that children participating in WIC have higher diet quality when compared with nonparticipants from low-income households¹. Prior studies, however, have examined WIC participation as a snapshot in time. Because WIC provides ongoing nutrition education for caregivers, and healthy foods for young children, longer participation in WIC may have a cumulative positive influence on child diet quality.

This longitudinal observational study included 1,250 children* from the WIC Infant and Toddler Feeding Practices Study-2², which recruited women in 2013 as they enrolled in WIC. Ten telephone interviews were conducted with study mothers between birth and 24 months. Duration of WIC participation was categorized as low (infant year only), intermediate (some beyond the infant year), or high (most of the first 2 years of life).

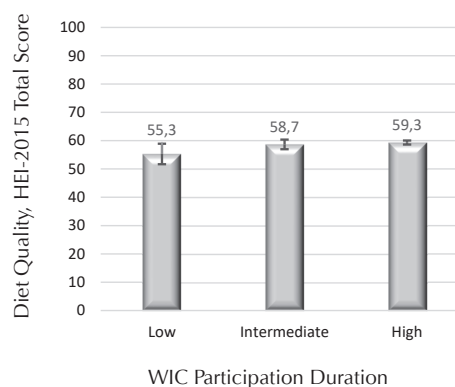
Child diet quality at 24 months was evaluated using the Healthy Eating Index-2015 (HEI-2015)³. Components of the HEI-2015 include adequate intake of total fruits, whole fruits, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, and fatty acids, and moderate intake of refined grains, sodium, added sugars, and saturated fats. Component scores are summed to a total score from 0-100, with 100 indicating the individual adhering to the Dietary Guidelines for Americans⁴.

WIC participation and diet quality

Longer WIC participation duration was associated with higher intakes of total vegetables, greens and beans, seafood and plant protein, and lower intakes of refined grains and saturated fat.

In analyses adjusted for demographic variables (maternal race, ethnicity, education level, household income relative to the national poverty guideline), children in the high duration group (adjusted mean 59.3) had significantly higher HEI-2015 total scores than did children in the low duration group (adjusted mean 55.3). The intermediate duration group (adjusted mean 58.7) was not significantly different from either of the other groups (Figure 1).

Figure 1: Mean Healthy Eating Index 2015 (HEI-2015) total scores at 24 months by WIC participation duration, adjusted for covariates



Conclusion

Children who participated in WIC during most of the first 2 years of life had higher diet quality at 24 months than children who, despite remaining eligible, stopped participating during infancy. The difference may be due to higher consumption of vegetables and beans and lower consumption of refined grains and saturated fats. Healthier intakes of these food groups may be attributed to receipt of the WIC food package which at 24 months includes vegetables, beans, whole grains, and low-fat or nonfat milk. WIC may also influence child diet quality through the nutrition education provided to caregivers, and the nutritious foods provided for children. This study supports ongoing efforts by the WIC program to increase retention of children in the program, and provides Registered Dietitian Nutritionists, and other WIC professionals, with insight into the nutritional benefits of encouraging WIC participants to stay on the program longer.



Based on: Weinfield NS, Borger C, Au LE, Whaley SE, Berman D, Ritchie LD Longer Participation in WIC Is Associated with Better Diet Quality in 24-Month-Old Children. *J Acad Nutr Diet.* 2020;120(6):963-971.

*Study participants who reported discontinuing WIC due to perceived program ineligibility were excluded from analyses, to restrict the non-WIC group to those who remained income eligible.

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3. National Cancer Institute. Healthy Eating Index overview and background. <https://epi.grants.cancer.gov/hei/>. Updated August 13, 2018. Accessed December 6, 2018.
4. US Depts of Health and Human Services and Agriculture. 2015-2020 Dietary Guidelines for Americans, 8th ed. <http://health.gov/dietaryguidelines/2015/guidelines/>. Updated December 6, 2018. Accessed July 30, 2020.

Insight into the Decision-Making Processes of WIC Participants While Food Shopping

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Low-income populations experience disparities in diet quality as compared to higher-income population^{1,2}. The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) promotes the purchase of higher nutritional-quality food. Promoting their purchasing is important because the products purchased and brought into the home food environment can directly influence the foods and beverages consumed³⁻⁵. Understanding the decision-making process to purchase food concurrent when that decision is being made in the grocery store can help inform future nutrition education programming and interventions.

This qualitative study used think aloud methodology with 28 female parents enrolled in WIC to identify the factors that influence their food purchasing decisions while food shopping. The methodology captured the processing of information through audio recorded verbalization as the parent concurrently grocery shopped. Audio recordings were transcribed and thematic analysis was conducted used a codebook with codes determine a priori. Four themes emerged related to factors that influenced food purchasing decisions and three themes emerged related to shopping behaviors (Table 1).

Child Preference: Most parents reported that the decision to purchase a food was influenced by their child's preference which was due to the parent asking their child or the child requesting particular foods.

"So now, I am going to the green seedless grapes . . . this is just what my son likes. And, it doesn't really matter how much it cost because I'm going to get it for him anyway."

"[Child's name], do you want to get steamed broccoli or do you want to get the red pepper?"

Value: Parent reported the importance of cost and value when making decisions on what foods to purchase.

"Usually, I like to go to the fruit area first just to see what type of fruits they have on sale. I know we need lettuce. I usually get the bigger box over here because I can get like four of them for \$4.00."

Need for food preparation or pantry: Many parents purchased food based on need of a common pantry produce or had a particular food items for a meal, snack or recipe.

Parent Choice: Decisions to purchase food were also based upon the parents' choice due to taste, the perceived health or nutrition

benefit of a food and/or past experience or habit of purchasing the food.

"I'm gonna get some blackberries. [They are] 1.99 but they're really good."

Shopping behaviors of parents were also revealed based upon three themes that included WIC participation, multiple trips to the store and items of interest (Table 1).

WIC Participation Parent enrollment in WIC influenced food purchasing decisions based upon WIC eligible foods.	<i>"When you're done shopping, they give you a receipt and it tells you what you had and what you used, so I usually keep that on me so I know."</i>
Multiple trips Parents reported making multiple shopping trips to the store.	<i>"I'll just keep coming back to replenish, when I feel. Because I notice when I go grocery shopping, if I load it all up, a lot of things go bad, and I don't like to see things go to waste."</i> <i>"I'm gonna buy that for now and then there's a farmer's market they can go to . . . There I can buy any vegetables and it's cheaper when I'm using WIC . . . So, I have \$8.00- \$8.00, it goes a long way."</i>
Items of interest Parents specifically discussed purchasing water and juice.	<i>"We don't have water—and bread. [This is] \$4.99. Two for six is not bad. That's \$3.00 but they're usually like two for nine. We'll get this one. Three bucks. That's a good deal."</i>

Qualitative themes identified potential areas of focus for nutrition education offered through WIC. Increasing the nutrition knowledge of parents and incorporating simply strategies to assist with decision making while food shopping may encourage the purchasing of higher-quality foods which may influence consumption.



Based on: Robson SM et al. Qualitative Research on the Real-Time Decision Making of WIC Participants While Food Shopping: Use of Think-Aloud Methodology. *J Acad Nutr Diet.* 2020;120(1):111-119.

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