

Are Economic Incentives Useful for Improving Dietary Quality Among WIC Participants and their Families

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Dietary quality, for which the best single index for American adults is fruit and vegetable intake, is a powerful protective factor for various common chronic diseases including several of the major causes of premature death and disability. Low income is well established as a risk factor for poor dietary quality in the US. The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) program provides an ideal context for investigating means to improve fruit and vegetable consumption in a vulnerable population. The WIC program was designed and developed prior to the time that the relationship of fruit and vegetable intake to chronic disease risk was well established, and the foods were selected to provide supplements of the nutrients that at that time were thought to be most limiting in the diets of women and children – namely protein, calcium, vitamin A and vitamin C. Recently there has also been considerable discussion about adding fruits and vegetables to the WIC food “package” but the potential cost is substantial. A recent report by the Institute of Medicine (IOM) reviewed the current public health context for the development of WIC’s food packages and proposed criteria for the selection of food items to be included. Fruits and vegetables were among the food groups considered to be of highest priority. We investigated whether providing supplemental financial support specifically for purchase of fresh fruits and vegetables would result in high uptake of the supplement and if the individuals would continue to consume more fruits and vegetables after financial support was removed.

We used a non-equivalent control group design to provide vouchers for fresh fruit and vegetable purchase to low-income women participating in the PHFE WIC program in Los Angeles, CA. We recruited 602 women who were enrolling for postpartum services at three selected WIC program sites (approximately 200 per site) in Los Angeles. Sites were assigned to intervention with vouchers redeemable at a local supermarket; intervention with vouchers redeemable at a nearby year-round farmers’ market; and a control site with a minimal non-food incentive for participation in interviews. Vouchers were issued bimonthly, at the level of US\$10 /week. Interventions were carried out for six months, and participants’ diets were followed for an additional six months following the intervention. Quantitative 24-hour dietary recalls were conducted at four interviews for all participants; in addition, at the intervention sites two extra interviews spaced two months apart were held to obtain information on the fruits and vegetables purchased with the vouchers. Specifically, participants were asked to respond to the question “What did you buy with your fruit and vegetable coupons last week?” Voucher redemption rates were obtained from scanned data from the supermarket’s corporate headquarters. In the farmers’ market condition, vouchers presented for purchase were collected by the farmers’ market manager and turned into the city government’s accounting department for tallying; vouchers were then mailed to the study’s research staff who re-counted the redeemed vouchers and logged the tallies into an electronic database.

In all, US\$44,000 worth of vouchers were issued for the supermarket and US\$44,960 for the farmers’ market. Redemption rates were 90.7% for the farmers’ market and 87.5% for the supermarket. Overall, participants reported purchasing 27 and 26 different fruits, and 34 and 33 different vegetables in the farmers’ market and supermarket outlets respectively. Five fruits and five vegetables accounted for about 70 percent of the items reported for each group, with only minor differences in items. The ten most frequently reported items were oranges, apples, bananas, peaches, grapes, tomatoes, carrots, lettuce, broccoli and potatoes. A larger number of item purchases were reported for the farmers’ market condition although the total number of types of fruits and vegetables did not differ significantly between the two conditions.

Participants in the intervention conditions increased their consumption of fruits and vegetables with use of the supplement and sustained that increase six months after the intervention was completed. At baseline, participants at the farmers market site reported eating 2.2 servings/1000 kcal on average, at the supermarket site 2.9 servings/1000 kcal and at the control site 2.6 servings/1000kcal. Six months post-intervention, this same comparison was made and the increase in fruit and vegetable intake reported by the intervention sites was sustained. Both the farmers market and supermarket sites reported eating 4.0 servings of fruits and vegetables/1000 kcal on average, while the control site reported eating 3.1 servings/1000 kcal on average. The difference in consumption between each of the intervention sites and the control site was statistically significant even after adjusting for multiple comparisons. These results were identical when evaluating consumption of fruits and vegetables excluding beans and potatoes and

fruits and vegetables excluding juices. Increases in vegetable consumption were primarily responsible for the overall increases in fruit and vegetable intake.

We conducted a linear regression analysis using baseline demographics, government program participation, body composition, food security status, reported energy intake, reported fruit and vegetable intake, infant feeding method, and treatment site to explore which of these factors was associated with fruit and vegetable intake six months post-intervention. We found that higher reported intake of fruits and vegetables six months post-intervention was associated with reported fruit and vegetable intake at baseline, preference for speaking Spanish, and being a participant at either the farmers market site or the supermarket site when compared to the control site.

In conclusion, the variety of choices of fruits and vegetables exhibited in this study leads us to conclude that low-income consumers make wise, varied and nutritious choices from available produce and that the potential for dietary improvement with a targeted subsidy that allows free choice within the fresh produce category is significant. Neither the supermarket nor the farmer's market found the study particularly burdensome, but rather were positive about their participation and no specific barriers arose to redemption of the vouchers by participants or retailers. In addition to the economic intervention, we attribute the high intake of fruits and vegetables in this study to the large proportion of Latinos included. The study participants' sustained intake of fruits and vegetables may also be reflective of the positive cultural habits that they have retained as well as the timing of the study at a critical point in the life course.