Nutrition Education with Incentive at NYC Farmers Markets May Contribute to Longer-Term Increases in Produce Consumption

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SUMMARY

In 2016-17, the New York City (NYC) Health Department evaluated the relative impacts of nutrition education programming and incentive distribution at NYC farmers markets (FMs) on both initial and longer-term changes in fruit and vegetable (FV) consumption. No studies to date have explored the relative impact of these programs or the long-term sustainability of initial gains achieved by these programs.

Our findings indicate that NYC nutrition education programming at FMs, which includes distribution of a small financial incentive, may contribute to longer-term increases in FV consumption more than incentive distribution alone.

BACKGROUND

Neighborhoods with high poverty rates (20% or higher) in NYC are comprised predominantly of Latino (41%) and Black (26%) New Yorkers and have been shaped by many factors including racist and discriminatory public policies and private practices. This has resulted in high concentrations of poverty and inequitable distribution of resources, including access to affordable healthy food.

NYC adults residing in neighborhoods with high poverty rates consume approximately 1 day less of FV than those residing in neighborhoods with low poverty rates [1].

In NYC, the Just Say Yes to Fruits and Vegetables Stellar Farmers Markets Program (Stellar) provides free nutrition and cooking demonstrations for adults from July-November at select FMs, primarily located in neighborhoods with high poverty rates.

Stellar participants receive $2 Health Bucks (HB) per participant at FMs in NYC toward fresh produce. A 2012 cross-sectional evaluation at Stellar markets found that participation in Stellar workshops was associated with significantly higher FV consumption [2].

METHODS

This quasi-experimental, longitudinal evaluation surveyed 3 groups of FM shoppers at 3 timepoints to assess the differential impact of Stellar programming and HB distribution on both short- and longer-term changes in FV consumption.

In July-August 2016 the following 3 groups were recruited from NYC FMs:

- Stellar attendees from 2 FMs with Stellar programming (Stellar group)
- Shoppers at 2 FMs without Stellar programming who received $6 in HB at recruitment, and $6 in HB/month for the following 3 months (HB group)
- Shoppers at 2 FMs without Stellar programming who did not receive HB (Control group)

Surveys were conducted at the following 3 timepoints:

- Wave 1 (Baseline), in person at recruitment
- Wave 2, by phone/mail, August-September 2016
- Wave 3, by phone/mail, February-April 2017

Approximately 6 weeks following recruitment in each group, the season of Stellar programming and the final HB mailing to the HB group.

Participants received a $2 fare Metrocard worth $5.50 for completing the Wave 1 survey and were mailed $50 gift cards following completion of the Wave 2 and 3 surveys.

Surveys were conducted in English and Spanish.

All FMs were located in neighborhoods with high poverty rates.

SURVEY MEASURES

- At each timepoint, FV consumption during the past 30 days was measured using 7 FV items from the NHANES dietary screener questionnaire: whole fruit; green leafy salads; non-fried potato; cooked dried beans; other vegetables; tomato-based soups; tomato sauces.
- At Waves 2 and 3, respondents were asked if they participated in a cooking class at a FM since completing the Wave 2 survey.

SURVEY RESPONSES

- A total of 3,290 FMs participated in the survey at Wave 1, Wave 2, and Wave 3, with response rates of 76% (Wave 1), 47% (Wave 2), and 26% (Wave 3).

ANALYSIS

- Daily FV consumption was calculated from survey responses.
- Adjusted average daily FV consumption for each group at each wave, and within-group changes from Wave 1 (0-05) were assessed by linear regression models accounting for participant-level clustering and fixed effects for wave, group, wave and group interaction, education, income, and race/ethnicity.

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RESULTS

PARTICIPANTS

The survey included 76% respondents at Wave 1:

- Stellar: 110, with 67% retention at Wave 2 and 49% retention at Wave 3
- HB: 330, with 37% retention at Wave 2 and 33% retention at Wave 3
- Control: 325, with 38% retention at Wave 2 and 37% retention at Wave 3

At baseline, 64% of overall participants were female; 27% were Latino and 20% were Black. Stellar group participants were more likely to be non-white, have less than a high school education, and have lower-income than participants in the Control and HB groups. 6% of baseline surveys were conducted in Spanish.

FV CONSUMPTION (Figure 1, Table 1)

WAVE 1:

- At baseline, Stellar participants consumed FV an average of 2.63 times/day, HB participants 2.80 times/day, and Control participants 2.48 times/day.

WAVE 2:

- At baseline, HB had non-significant increases from baseline:
  - Stellar: +0.28 times/day
  - HB: +0.02 times/day
  - Control: -0.04 times/day

WAVE 3:

- Stellar participant FV consumption increased significantly from baseline, while HB and Control FV consumption decreased, but not significantly:
  - Stellar: +0.41 times/day
  - HB: -0.27 times/day
  - Control: -0.22 times/day

COOKING CLASS ATTENDANCE

- At Wave 2, 59% of Stellar, 16% of HB, and 13% of Control participants reported having attended a cooking class at a FM since completing the Wave 1 survey.
- At Wave 3, 46% of Stellar, 16% of HB, and 13% of Control participants reported having attended a cooking class at a FM since completing the Wave 2 survey.

DISCUSSION

Both the Stellar and HB groups demonstrated similar average increases in FV consumption at Wave 2, which occurred shortly after Stellar participants attended a workshop and during the ongoing 3-month period of HB distribution to the HB group.

However, at Wave 3, which occurred several months following both seasonal conclusion of Stellar programming and HB mailings, only the Stellar group's FV consumption increased, while the HB and Control groups' FV consumption similarly decreased.

Stellar programming, which includes distribution of a HB incentive, may contribute to sustained increased FV consumption more than incentive distribution alone.

Continued cooking class attendance among Stellar group participants may have contributed to this sustained increase.

LIMITATIONS

- Sample sizes were lower than the planned 500 per group, particularly in the Stellar group, which was recruited from markets that newly introduced Stellar, and lower than expected.
- Self-selection bias may have been a result of Stellar programming being new to community members and bad weather conditions during the recruitment period. Therefore, the statistical power of this study is limited.
- Although seasonal variation between study waves was consistent among all study groups, changes in season may impact consumption.
- There may be self-selection bias in the sample resulting from factors that may have motivated both initial study participation and completion of follow-up surveys.

CITATIONS

1. NYC Department of Health and Mental Hygiene Community Health Survey, 2018