Across Texas, food banks are adopting a new strategy to help all Texans reach their full potential for healthy, productive lives. “Feeding with Impact” pairs healthy food distribution with evidence-based health interventions to provide a holistic approach that empowers hungry families to move toward better health.

A Strong Research Foundation

The foundational ideas behind comprehensive and integrative programs, such as those using the social-ecological model, are well-supported in health literature (Golden & Earp, 2012). Although Feeding with Impact does not combine all the elements of the social-ecological model, it works to integrate multiple aspects of a person’s life to promote behavior change through food provision and evidence-based programming. Multi-component programs like Feeding with Impact have been demonstrated as more effective than interventions with only one component (McAleese & Rankin, 2007; Parmer et al, 2009; Prell et al., 2003). Providing both resources and services as an integrated tactic is a promising strategy for low-income populations.

Evidence-Based Programming

Feeding with Impact encompasses multiple program models, all of which place health and fresh produce at their core. Below are examples of recent and promising programs.

**Diabetes Programs**

Feeding America conducted a Diabetes Initiative Pilot Project that included diabetes screening and monitoring of glycemic control, diabetic-appropriate food distributions, client referrals to primary care providers, and diabetes self-management support and education. This 6-month program was evaluated in a pre-/post- format measuring diabetic biomarkers, intake, self-efficacy, and additional variables. The following statistically significant outcomes were demonstrated after six months of participation (Seligman et al., 2015):

- Improvement in mean HbA1c (8.11 to 7.96 for all participants and 9.52 to 9.04 for participants with uncontrolled baseline)
- Decline in proportion of participants with very poor glycemic control
- Decline in number of severe hypoglycemic episodes
- Decline in number of self-reported “trade-offs” between food versus medicine or supplies
• Increase in fruit and vegetable intake (2.8 to 3.1 servings for all participants and 2.8 to 3.0 for participants with uncontrolled HbA1c at baseline)
• Increase in self-efficacy toward managing diabetes
• Decreased diabetes distress (the emotional burden of chronic disease management)
• Improvement in medication non-adherence

Food Prescription Programs

Wholesome Wave's Fruit and Vegetable Prescription Program (FVRx) is one example of a food prescription program that provides healthy eating counseling and medical advice along with a prescription for fresh fruit and vegetables that is equivalent to providing $1/day for each patient and family member(s). After completion of this four-month program the following results were demonstrated (Wholesome Wave, 2014):

• Over 95% of participants indicated that the family’s intake of fruit and vegetables increased at least some, with almost 81% indicating intake increased a lot
• Over 97% of participants indicated that the child’s intake of fruit and vegetables increased at least some, with almost 78% indicating intake increased a lot
• Decreased BMI in 40.3% of participants (did not specify how much decrease)
• 70% increased knowledge regarding fruits and vegetables
• 77% report attending farmers markets weekly or more
• 59.7% of households reported increases on indicators of food security

Policy Efforts

Policy paired with provision of food is now a commonality with over half of America's students coming from low income families (Suitts, 2015) and the implementation of the 2010 Healthy, Hunger Free Kid Act. It is well established that adequate nutrition impacts growth and development, brain capacity, cognitive capabilities, and academic performance (Rausch, 2013), however school meals have not always been provided at the proper quality.

With USDA’s new requirements, policy requires that meals and snacks align with Dietary Guidelines, increasing whole grains, low-fat dairy, fruits, vegetables, and lean protein. New requirements coupled with low income students’ eligibility to receive free or reduced price meals create a policy and provision combination that helps to provide healthier meals and impact health. Research examining implementation of new guidelines found significant changes for students (Schwartz et al., 2015):

• Increased selection of fruit one year and two years after implementation (54% to 66% to 74% choosing fruit)
• Increased consumption of vegetables two years after implementation (45.6% to 63.6% consumed)
• Increased consumption of entrée two years after implementation (71% to 84% entrée consumption, less food waste)

Additionally, the Community Eligibility Provision allows schools in high-poverty areas to provide free meals to all students, which reduces application, verification, and stigma that may impact provision of meals. Due to the recent nature of USDA’s guidelines and staggered implementation, there is limited research regarding the outcomes of such policy and provision combination.
Implementation of additional policy can help improve behavior as well. The Healthy Schools Act, implemented in Washington DC, required that all public and charter schools offer free breakfast to all students regardless of income. This law went into effect in 2010 and over the year the following results were demonstrated (Share our Strengths, 2013):

- Participation in school breakfast rose 24% to 71% total participation.
- For schools choosing to implement free breakfast within the classroom, participation rose 50% up to 79%.

Although The Healthy Schools Act does not document actual intake, the simple behavior change of consuming breakfast has great potential to improve long-term performance since it is well documented that children who do not eat breakfast have poorer academic performance, higher absenteeism, and less focus (Centers for Disease Control and Prevention, 2014).

Case Management Approach

Freshplace is a program based upon the Social Cognitive Theory and the Stages of Change Model that focuses on empowering clients toward self-sufficiency. The provision of client choice food is paired with a case management approach, in which a project manager helps clients develop individual goals, monitor progress, and address barriers to meet goals. Motivational interviewing, a person-centered form of counseling, is used to help drive clients to meeting their goals. Finally, evidence-based services based on the needs of each client are offered. Evaluation was conducted to compare clients only receiving food from pantries to clients participating in Freshplace. Follow-up was conducted at 3, 6, 9, and 12-months. The following outcomes were revealed compared to control (Martin et al., 2013):

- Increased fruit and vegetable intake at 3, 9, and 12 months compared to pre-implementation; on average during the study intervention consumed approximately one additional serving per day
- Increased self-sufficiency score at 3, 6, 9, and 12 months (a measure of education, employment, income, physical health, mental health, housing, health insurance, child care, transportation, and psychosocial stress)
- Decrease in very low food security at 3 and 9 months

Food Insecurity Screening

Food insecurity screening programs help identify food insecure individuals using an 18-, 6-, or 2-item validated questionnaire and provide appropriate referrals to obtain food or provide immediate food. The Boston Medical Center operates an in-house food pantry that pairs with food insecurity screenings. Clients are screened by doctors for food insecurity and then receive a referral to the in-house food pantry based on dietary needs (somewhat of a combined food prescription/food insecurity screening program). Additionally, a demonstration kitchen is included in which patients can receive education regarding the food they received and how to cook it, as well as education on diet-related disease management. Thus far, the program has measured self-efficacy and found that participants are more confident in preparing meals at home. However health outcomes have no yet been measured (Burg et al., 2016). Since self-efficacy is a critical foundational component to behavior change, such a result is a promising indicator for behavioral and associated health outcomes (Bandura, 2004).

Mobile Distribution

Mobile distributions may pair mobile markets with other services. Veggie Van, a pilot mobile produce market, conducted a weekly intervention of providing boxes of reduced-cost fruits and vegetables along with cooking and nutrition education to low-income communities. Evaluation was conducted prior to implementation and again at 3 months. Findings indicated the following (Leone, 2016):
Participants that used the van consumed significantly more fruits and vegetables than those who did not (1.6 servings per day more)

- Frequent shoppers at the mobile market reported an increase in their ability to buy fruits and vegetables
- Frequent shoppers at the mobile market report additional health improvements (unable to access full article for more information)

Environmental Strategies

Environmental strategies pair food distribution with a change in low-income communities’ environments to help make choosing healthy foods the easy choice. Wholesome Wave’s Double Value Coupon Program works to establish a network of incentive programs and farmers’ markets in which participants can attend and receive twice the dollar amount for their federal nutrition benefits if they purchase fruits and vegetables.

Through this program’s efforts to consistently expand the number of markets within their network, they have expanded to around 730 markets in over 40 states that accept their coupons, increasing the environmental opportunity for clients to access the provision of more fruits and vegetables. An evaluation of this program determined that (Wholesome Wave, 2012):

- 90% of participants reported increasing or greatly increasing their fresh fruit and vegetable consumption.
- 84% of participants that reported difficulty in accessing fresh fruits and vegetables got more than half of their f/v at participating markets
- 95% agreed or strongly agreed that it was easier to purchase fruits and vegetables because of the access to the markets

The Nudges project is another environmental strategy aimed at increasing clients’ selection of healthier foods. Nudges combines the provision of food at a food pantry with a variety of environmental cues that encourage the selection of target food items. For example, Nudges could include putting an item in a more eye-appealing display or bundling foods together so clients know how to incorporate ingredients into a meal. Although Nudges is fairly new and has not undergone long-term evaluation, preliminary results are promising, including (Rivera et al., 2016):

- Multiple exposures to whole wheat bread increased the likelihood of a client taking a loaf by 90%
- Shelf tags for oatmeal increased the likelihood of a client taking oatmeal by 202%
- Priming clients with pictures of oranges increased take rate to almost 100%
- Display changes for cabbages increased the likelihood of a client taking cabbage by 42%

(Nudges involves cueing specific healthy food items, so above results report on only a few food items.)

Direct Education

Cooking Matters provides interactive grocery store tours and 6-week, hands-on, evidence-based, nutrition education courses that teach the knowledge and skills required to shop for and prepare healthy, affordable meals. Along with education, Cooking Matters offers 10 pounds of healthy groceries per week. A mixed-method, quasi-experimental impact evaluation was conducted to assess changes in behavior, self-efficacy, and outcomes related to nutrition and food resource management at three and six months post-intervention. Three months post-program, participants demonstrated the following significant outcomes (Bell et al., 2016):
• Increase in cooking (3.9 to 4.4 on 5-point scale) and food resource management confidence
• Decrease in perceived cooking barriers (2.4 to 2.2 on a 3-point scale)
• Increase in dietary selection of low-fat dairy (3.3 to 3.5), low-sodium (3.1 to 3.4), whole grain (3.7 to 3.8), lean protein (3.7 to 4.0), and healthy restaurant options (3.0 to 3.2) on a 5-point scale
• Increase in consumption of fruit (3.4 to 3.7), green salad (2.8 to 3.0), non-fried vegetables (3.2 to 3.4), cooked beans (2.4 to 2.6), and water (4.5 to 4.6) on a 5-point scale
• Decrease in consumption of fried potatoes (2.3 to 2.0) meals from restaurants (2.1 to 1.9), and sugar sweetened beverages (2.2 to 2.1) on a 5-point scale
• Increase in meals cooked from scratch (5.0 to 5.3 dinners per week)
• Increase in food resource management behaviors, such as comparing prices, planning meals, and using a grocery list when shopping (3.6 to 3.9 on a 5-point scale)
• A majority of these changes, aside from cooking meals from scratch and consumption of fruit and fried potatoes, were maintained significant even at six months.

Produce Drops

Produce drops involve delivery of fresh fruit and vegetables coupled with other services. Brighter Bites is a 16-week school-based program for children and families attending low-income schools, founded upon components from the Social Cognitive Theory and the Theory of Planned Behavior. The intervention includes weekly distributions of ~30 pounds of fresh produce, weekly healthy recipe tastings for families, and health education for students and parents. A quasi-experimental, non-randomized study of the program observed the following statistically significant outcomes from pre-intervention to post-intervention (immediately following intervention) (Sharma et al., 2016):

• Increase in child consumption of cups of fruits (1.26 to 1.38 cups/day)
• Increase in child consumption of cups of vegetables (0.56 to 0.67 cups/day)
• Decrease in child consumption of added sugars (5.30 to 4.64 tsp/1000 kcal/day)
• Increase in parent consumption of servings of fruit (+0.25 servings/day)
• Increase in parent understanding of nutrition facts label and using the label to make purchasing decisions
• Increase in parents cooking from scratch at home
• Increase in families eating together at home
• Increase in home availability of fruits and vegetables during mealtimes
• Improvement in parental rules regarding portion sizes

Other school-based programs that pair produce distribution with related educational programs show promise. The Mississippi Fresh Fruit and Vegetable Program combined distribution of fresh produce with supplemental classroom lessons, food tasting events, newsletters, promotional posters. This program demonstrated the following outcomes in select grades (Coyle et al., 2009):

• More positive attitudes toward eating fruits and vegetables
• Increased self-efficacy toward consuming fruits and vegetables
- Increased willingness to try new fruit
- Increased preference toward fruit
- Increased intention to eat fruit
- Increased actual intake of consumption of fruit in school

**A Solid Investment for Texans’ Health**

This research base predicts that the Feeding with Impact strategy will significantly “move the needle” on low-income dietary health in Texas.

We are proud to steward the resources supporting this strategy, including significant investments from the Texas Department of Agriculture, Lyda Hill Foundation, USDA-FNS and the Corporation for National and Community Service.

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