


Evaluation of an Integrated Health Promotion Program for a low-income urban population: Findings and lessons learned

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Abstract

Objectives: To evaluate a multicomponent pilot program for low-income individuals with, or at risk for, hypertension, diabetes, and/or overweight.

Design: Pre-post evaluation including baseline and follow-up assessments, satisfaction surveys, program utilization data, and focus groups.

Sample: The evaluation included 138 participants. The majority were Latinx (88%), female (82%), born outside the United States (80%), and had not graduated from high school (52%). The most common health conditions were hypertension (59%), overweight or obesity (55%), high cholesterol (53%), and diabetes (34%).

Measurements: Engagement in program activities, health indicators (e.g., blood pressure), and behavior change. Qualitative data focused on perceptions of the program and its impacts.

Intervention: The program offered a number of health promotion services, including consultation with a nurse and a community health worker (CHW), health and nutrition talks, subsidized farm shares, cooking classes, exercise classes, and home visits.

Results: There were improvements in general health, blood pressure, and knowledge and behavior related to disease management and healthy eating.

Conclusions: Program success was attributed to the wide range of complementary program components. The staffing model was also a strength: the CHW/nurse collaboration combined clinical expertise with cultural, language, and community knowledge to create a program that was accessible and empowering.

KEYWORDS

disease management, health promotion, minority health, nutrition, program evaluation

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1 | BACKGROUND

There is a clear association between health and economic well-being (Khullar & Choksi, 2018; Woolf et al., 2015). Compared to those with higher incomes, low-income adults are more likely to be in fair or poor health, to have activity limitations, and to die younger—in part due to high rates of chronic disease, including obesity, type 2 diabetes mellitus (diabetes), and hypertension (Khullar & Choksi, 2018; Ogden et al., 2017; Toprani et al., 2016). Although a broad range of factors contribute to chronic disease, many are food related (Vaughan et al., 2017). In low-income communities, specifically, these factors often include limited access to healthy foods (Chen et al., 2016; Evans et al., 2015), a surplus of unhealthy options (e.g., fast food; Cooksey-Stowers et al., 2017), food insecurity (Gregory & Coleman-Jensen, 2017; Gundersen & Ziliak, 2015), and insufficient knowledge regarding healthy food preparation (Garcia et al., 2016; Garcia et al., 2019; Mozaffarian, 2016). Among Latinx immigrants, unfamiliar food environments (Munger et al., 2015; Park et al., 2011) and culturally influenced food behaviors (Lindberg & Stevens, 2011) may also contribute to unhealthy diets (Morrill et al., 2019).

Studies have demonstrated effectiveness for a number of discrete dietary interventions, including increased access to affordable fruits and vegetables (Bowling et al., 2016; Cavanagh et al., 2017), nutrition education (Dannefer et al., 2015), skill-building (e.g., cooking classes; Byrne et al., 2017), social support (Lemstra et al., 2016), and health care navigation (Carter et al., 2018; Perry et al., 2014). Given the challenges of sustaining changes in dietary behavior, more comprehensive, multicomponent approaches are recommended by researchers (Lemstra et al., 2016; Mozaffarian, 2016; Story & Duffy, 2020) and program participants alike (Gary-Webb et al., 2018; Realmuto et al., 2017, 2018), yet there is a dearth of information on implementation or outcomes of programs that integrate these discrete interventions.

In an effort to partially address this gap, this study describes findings from an evaluation of “Wellness Rising,” an integrated, multicomponent pilot program for low-income individuals with, or at risk for, hypertension, diabetes, and/or overweight. We describe changes in dietary behavior and health indicators, as well as participant perspectives on the program, including the value and utility of integrated services.

1.1 | Program description

Wellness Rising was implemented from July 2018 to July 2019 by a multiservice, not-for-profit community-based organization (CBO), working in collaboration with a nearby publicly funded safety-net hospital. Other project partners included a nonprofit supplier of local farm-fresh food; a community development organization (providing support in project management); and an external evaluator. The evaluation focused on gathering data for quality assurance and improvement purposes, and assessing implementation process and

outcomes, to inform replication, adaptation, and the development of community-based health programming, more broadly.

The target community was the Bushwick neighborhood of Brooklyn, New York City (NYC). The population of Bushwick is approximately 112,000 and primarily Latinx (65%) and African-American/Black (20%). Thirty-five percent of residents have less than a high school diploma; a similar number (35%) were born outside the United States. Twenty-eight percent of Bushwick residents have limited English proficient and one-quarter (25%) live in poverty (Hinterland et al., 2018).

Wellness Rising program staff consisted of three bilingual (Spanish/English) community health workers (CHWs), a program nurse, a program director, and an administrative assistant. Potential participants were recruited by the CHWs on a rolling basis, primarily through (a) in-person outreach to patients of the adult medicine clinic at the partnering hospital; (b) in-person outreach at a senior center affiliated with the CBO; and (c) word of mouth. Individuals were eligible for the program if they had hypertension, pre-diabetes, diabetes, overweight, and/or obesity, as self-reported to the CHW and confirmed by the program nurse.

Each CHW was assigned a caseload of 50 participants and was responsible for providing practical and social supports, including health education, assistance with making appointments and obtaining or renewing health insurance, and referrals for legal assistance and housing. The program nurse provided one-on-one consultations with participants, which included medication and glucose log reviews, blood pressure and weight checks, and facilitated communication with providers. The nurse worked closely with the CHWs to ensure they had the most accurate, evidence-based health information and to intervene in the case of participants who appeared to be medically unstable. The administrative assistant managed the data collection and budget and assisted with program coordination and communications.

The program offered a range of health promotion services, including:

- Individual and group health and nutrition talks;
- Subsidized farm shares, available for pickup weekly, with seasonal fruits and vegetables;
- Cooking classes, using foods available through the farm shares;
- One-on-one consultations with a nurse and a CHW, covering topics that included nutrition, health promotion, chronic disease management, health care access, and social determinants of health;
- Yoga, Zumba classes, and strength-training classes;
- Home visits.

Services were provided on site at the CBO and coordinated, so as to facilitate high levels of engagement and to promote synergy across components. For example, as the consistently high attendance at the farm share program became clear, complementary programming, such as nutrition education, was scheduled to coincide with the food distribution.

2 | METHODS

As a pilot, all participants were required to take part in the evaluation of the program. The evaluation had process and outcome components and included multiple qualitative and quantitative data sources. It was intended to support quality assurance and quality improvement efforts; consequently, preliminary results were reported to staff at regular program meetings and adaptations to the intervention were made, as appropriate.

In this study, we report on findings from the following sources¹:

- **Baseline and follow-up assessments:** Assessments were administered orally and in-person in English and Spanish by CHWs. Baseline assessments included questions on sociodemographics; motivation for participation; health-related behaviors; health status and health-related quality of life; health care use; and selected social factors, such as employment and food security. Follow-up assessments were conducted approximately 4 months after baseline, and included questions from the baseline assessment on health, health care use, and social factors, so as to be able to examine change over time. Respondents were also asked about engagement in program activities and referrals to outside services during this time period. A 4-month follow-up interval was considered long enough to assess process and outcomes (e.g., engagement, changes in health indicator; Bowling et al., 2016; Morrill et al., 2019; Walker et al., 2018), while short enough to track a sufficient number of participants within the 1-year funding period. It should be noted that participants were able to continue to engage in Wellness Rising program activities after the completion of the follow-up assessment.
- **Data from Wellness Rising program records:** Program data included blood pressure and weight, which were measured by the program nurse, as well as records of participation in Wellness Rising services and activities.
- **Satisfaction surveys:** Conducted by evaluation staff via phone, survey questions focused on perceived value of the program and its key components, program outcomes, barriers to participation, and recommendations for improvement.
- **Focus groups:** Three groups were conducted in Spanish with program participants ($n = 29$) toward the end of the pilot period to gather more detailed information regarding motivation for enrollment; challenges to prevention and management of chronic illness; strengths and limitations of the program; changes in health and behavior and the factors underlying those changes; and recommendations for program improvement. Focus group eligibility was limited to participants who had engaged in multiple components of the program, so as to ensure sufficient familiarity with program offerings and their attributes.

¹Staff interviews were also conducted as part of the evaluation. They are not included in this paper, as they were conducted primarily to assist the evaluators in understanding program implementation.

2.1 | Data management and analysis

All survey data were entered using Qualtrics survey software. Data from surveys and program records were cleaned and analyzed using Stata version 15 (StataCorp, LLC). Statistical significance was determined using the paired t test, McNemar's test, and McNemar-Bowker test. Significance was defined as a $p < .05$, based on the appropriate test. Focus groups were audio-recorded and professionally translated and transcribed. Transcripts were managed and analyzed using NVivo version 12 (QSR International). The coding scheme reflected the main goals of the evaluation and of the focus groups, as well as themes deriving from the data itself.

The evaluation protocol was approved by the Institutional Review Board of The New York Academy of Medicine. CHWs reviewed the consent form (available in both English and Spanish) with potential participants. Those interested in enrolling provided signed consent and received financial incentives for completion of surveys and focus groups: \$20 for the baseline assessment, \$25 for the follow-up assessment, \$10 for the satisfaction survey, and \$25 for the focus group.

3 | RESULTS

3.1 | Participant characteristics

As shown in Table 1, 138 individuals enrolled in Wellness Rising. The majority were Latinx (88%), female (82%), born outside the United States (80%), and had less than a high school education (52%). One third (33%) were working full or part time. Over half (55%) received some form of food assistance, including SNAP² (41%), WIC³ (14%), and/or food pantry services (10%). Approximately half reported "sometimes" (43%) or "often" (8%) running out of food in the prior 12 months. At the time of the follow-up assessment, 109 remained in the program, representing a 79% retention rate. There were no significant differences in sociodemographic or health characteristics between the full sample and those who completed a follow-up assessment.

The most commonly reported motivations to join the program were to learn about nutrition (67%), lose weight (48%), get healthy (44%), and learn about fitness/exercise (41%). Other reasons for joining included concern about hypertension (29%), concern about diabetes (29%), and concern about obesity (25%; data not shown).

Table 2 shows health care use and selected physician-diagnosed health conditions reported during the baseline assessment, for all participants and for the subset that was retained through the follow-up period. The most common conditions were hypertension (59%), overweight or obesity (55%), high cholesterol (53%), diabetes (34%), and depression (25%). Eighty-four percent of participants had

²SNAP, Supplemental Nutrition Assistance Program.

³WIC, Special Supplemental Nutrition Program for Women, Infants and Children.

TABLE 1 Participant characteristics at baseline

Characteristic	All participants	Participants with a follow-up assessment
	(N = 138) (%)	(N = 109) (%)
Race/Ethnicity		
Latinx/Hispanic	121 (88)	96 (88)
Black/African-American	14 (10)	10 (9)
American Indian/ Alaskan Native	2 (1)	2 (2)
Asian	1 (1)	1 (1)
White	1 (1)	1 (1)
Mixed	4 (3)	4 (4)
Gender		
Female	113 (82)	90 (83)
Male	23 (17)	17 (16)
Born in USA		
Yes	26 (19)	20 (18)
No	110 (80)	87 (80)
Education		
Did not complete HS	72 (52)	56 (51)
HS diploma or GED	29 (21)	23 (21)
Vocational/tech school	3 (2)	2 (2)
Some college or 2 year degree	15 (11)	12 (11)
College graduate or higher	17 (12)	14 (13)
Employment		
Working for pay (full or part-time)	54 (39)	43 (39)
Homemaker/caregiver	9 (7)	7 (6)
Not working	75 (54)	59 (54)
Food assistance received		
SNAP	56 (41)	46 (42)
WIC	19 (14)	14 (13)
Food pantry	14 (10)	11 (10)
None	62 (45)	48 (44)
Ran out of food in the last 12 months		
Often	11 (8)	10 (9)
Sometimes	60 (43)	45 (41)
Never	64 (46)	51 (47)

Note: Totals do not all equal these amounts due to missing values.

two or more health conditions, and 22% had five or more conditions. In the past year, half of participants had an emergency room visit, and 17% were hospitalized.

TABLE 2 Participant health conditions and health care use at baseline

Characteristic	All participants	Participants with a follow-up assessment
	(N = 138) (%)	(N = 109) (%)
Health conditions		
Hypertension	82 (59)	66 (61)
Overweight/obesity	76 (55)	59 (54)
High cholesterol	73 (53)	55 (50)
Diabetes	47 (34)	35 (32)
Depression	35 (25)	31 (28)
Prediabetes	24 (17)	21 (19)
Asthma/Breathing problems	21 (15)	17 (16)
Multiple health conditions		
2 or more	116 (84)	93 (85)
3 or more	88 (64)	73 (67)
5 or more	30 (22)	26 (24)
ER visits in the past year		
Yes	69 (50)	56 (51)
1-2 visits	49 (36)	39 (36)
3+	18 (13)	16 (15)
No	69 (50)	52 (48)
Hospitalizations in the past year		
Yes	23 (17)	18 (17)
No	115 (83)	90 (83)

Note: Totals do not all equal these amounts due to missing values.

TABLE 3 Participant engagement in program activities (N = 138)

	n (%)
Participation in program activities	
Visits with Community Health Worker	116 (84)
Visits with Program Nurse	101 (73)
Farm share	95 (69)
Physical activity	57 (41)
Health talks	43 (31)
Cooking classes	41 (30)
Special events	37 (27)
Number of activities	
None	23 (17)
One activity	40 (29)
Multiple activities	75 (54)

3.2 | Engagement in program activities

Table 3 shows participant engagement in program services and activities as indicated in Wellness Rising program data. Eighty-four percent of members had an individual visit with a CHW; 73%

attended an appointment with the nurse. Eighty-three percent participated in other program activities and services, including the farm share (69%), physical activity (Zumba, yoga, or both; 41%), health talks (31%), cooking classes (30%), and special events (27%). Over half (54%) participated in multiple programs or services. Thirty-nine percent of participants were referred by Wellness Rising staff to other types of services, including health insurance enrollment, housing, food supports, legal services, and health care (e.g., primary care, mental health services; data not shown).

3.3 | Health outcomes

Table 4 displays health indicators at baseline and follow-up. There was a statistically significant improvement in self-reported general health, with reductions in participants reporting "fair" health and increases in participants reporting "good" and "very good" health. There were also statistically significant decreases in both mean systolic and diastolic blood pressure (mean of 134/84 at baseline and 125/80 at follow-up) and a trend toward improved blood pressure categorizations (e.g., normal pressure). There was no significant reduction in weight or body mass index.

Focus group participants also reported improved health outcomes, including weight loss and improved management of

TABLE 4 Health status at baseline and follow-up (N = 103)

	Baseline n (%)	Follow-up n (%)
General health		
Excellent	1 (1)	2 (2) [†]
Very good	4 (4)	14 (13)
Good	28 (26)	37 (34)
Fair	71 (65)	50 (46)
Poor	3 (3)	6 (6)
Weight (n = 93) mean ± SD	172 ± 37	173 ± 40
BMI (n = 92) mean ± SD	31.5 ± 5.4	31.7 ± 6.2
Normal (18.5–24.9)	10 (11)	8 (9)
Overweight (25.0–29.9)	34 (37)	31 (34)
Obese (30.0 and above)	59 (64)	53 (58)
Blood pressure (n = 88) mean	134/84	125/80 [†]
Normal (<120/80)	18 (20)	27 (31) [*]
Elevated blood pressure (SBP: 120–129)	6 (7)	4 (5)
Stage 1 HTN (SBP: 130–139 or DBP: 80–89)	25 (28)	37 (42)
Stage 2 HTN (SBP: 140+ or DBP: 90+)	39 (44)	20 (23)

Note: Totals do not all equal 103 due to missing values.

**p* < .05 comparing pre-post responses using McNemar's Bowker's test.

[†]*p* < .05 comparing pre-post responses using paired *t* tests for both systolic and diastolic measures.

TABLE 5 Healthy behaviors at baseline and follow-up (N = 109)

	Baseline response n (%)	Follow-up response n (%)
Eat vegetables most days of the week		
Yes	73 (68)	80 (74)
No	35 (32)	28 (26)
Eat fruit most days of the week		
Yes	77 (71)	86 (80)
No	31 (29)	22 (20)
Sugar sweetened beverage > 1/day		
Yes	30 (28)	18 (17) [*]
No	78 (72)	90 (83)
Drink water daily		
Yes	96 (89)	98 (91)
No	10 (9)	8 (7)
Eat fast food > 1 time/week		
Yes	15 (14)	13 (12)
No	92 (85)	94 (87)
Cooked food from bodega > 1 time/week		
Yes	26 (24)	14 (13) [*]
No	82 (76)	94 (87)
Get up in middle of night to snack		
Yes	15 (14)	13 (12)
No	93 (86)	95 (88)

Note: Totals do not all equal this amount due to missing values.

**p* < .05 comparing pre-post responses using McNemar's test.

hypertension and diabetes. They also described improvements in mental health and mood.

Yes, I have benefitted. I have diabetes, type 2 diabetes, and since I have changed the way I eat, it's helped me in that my A1C has gone down. The day before yesterday I went to the doctor's and she told me, "Wow, you're on 5.8." And I would get up to 10 in A1C. So, I owe it to how I have changed my way of eating. I have stopped eating bread more or less, and I eat more healthy. I eat breakfast differently than I did before. I've been walking

(Focus group participant).

I do think that the health program helps a lot, because since I have been participating in the health program, I feel a lot better. My high blood pressure is under control. I learned to eat. I lost weight, and I'm not even taking medicine

(Focus group participant).

The worrying, the anxiety about eating, anxiety about getting places, anxiety about getting a job, [my Medicaid] has ended and, "My God, I can't pay." I mean, you get stressed easily. And here it's a relief. They say, "No, don't worry, if you need a hand, we're here." Like the weight becomes lighter. It has changed me completely. It makes me very happy... I'm more sociable, more friendly. I smile again. I believe in people again

(Focus group participant).

3.4 | Health behaviors

Table 5 displays health-related behaviors at baseline and follow-up. Although there were positive changes in most dietary behaviors included in the assessment, daily consumption of sugar-sweetened beverages and weekly consumption of food from *bodegas* were the only two to reach statistical significance.

A number of focus group participants described changes they made to food preparation and changes in dietary behavior, as a result of education and support from individual program staff, the cooking and nutrition classes, and the farm share. Participants reported learning about nutrition labeling, nutrients, and healthier methods for preparing foods. Multiple participants talked about reducing their consumption of rice and meats and transitioning away from high-sodium packaged seasonings.

I used the traditional things we use, adobo and things they sell here, but not now. Now, I use herbs to season, to cook, and they are very good. Cilantro, parsley. I have gotten used to cooking with less condiments than what I used before and more natural now

(Focus group participant).

We have tried to change the way we eat, because we come from Latin American countries with a lot of rice, and we were used to [eating] a lot of beans, rice, meat every day and not anymore. We cook rice at home maybe once a week and we cook a small amount, sometimes it's there for two days because everyone in my house is not eating rice. So, it's not that rice is bad. It depends on the kind of rice it is, but changing the portions, adding vegetables and we have changed that, our eating habits more than anything

(Focus group participant).

3.5 | Perceived program value

Focus group participants were asked about their perceptions of Wellness Rising and its component parts. As alluded to above, they valued the nutrition education and the availability of healthy foods.

They also valued the human components of the program, emphasizing the importance of support they received from staff. As new immigrants, adjusting to life far from family members and home communities, these personal connections were key.

I found emotional support here and that is what I have liked about this program. Yes, it's not the same as other programs where they only come and cook, but they don't pay as much attention to you as they do here

(Focus group participant).

I've been here for only a few months, and the program does change you completely, because we get out of the routine, which is: "come to the hospital, see a doctor, the doctor writes you a prescription, you get the prescription and that's it." On the other hand, this program helps us to get knowledgeable, to get out of where we are stuck, in such a way that you realize, "my problem is so small in relation to other people who have even bigger ones." They have that ability to reach us, that gift with words to be able to enter into our hearts and make it so that we feel good

(Focus group participant).

While focus group participants emphasized the role and significance of program staff, they mentioned the connections that developed to one another, as well.

The good thing about [the] programs, in my opinion, the groups are small, so you interact with everyone. You get to know the six people, you joke, the community health worker, or the people who are in charge are special, as well, because they have a nice personality, and they talk with you, they joke and everyone laughs... The group gets united and you feel comfortable. You find a kind of support, because you find friends. And that is good because in other places it's very cold

(Focus group participant).

4 | DISCUSSION

Evaluation results were largely positive. The program continuously engaged a particularly high need population, with high rates of poverty, low levels of educational attainment, and limited English language skills. Pre-post surveys and focus group findings showed increased knowledge and skills related to disease management, nutrition, and food preparation. There were statistically significant improvements in a validated measure of general health and in systolic and diastolic blood pressure. Program success was attributed

to the welcoming and compassionate environment; staff willingness to assist with a wide range of challenges that members faced; and the range—and integration—of program components, including nutrition education; cooking classes; the farm share; and individual sessions with the nurse and CHW, offering health information, as well as social support. The complementary nature of programming seemed key. For example, participants could learn about—and learn to cook—produce available from the farm share when they picked up their produce. This on-site coordination of food access, education, and skill development, when offered within a welcoming and supportive environment, facilitated the adoption and sustainability of healthy behaviors. Multicomponent programming offered at a single site, with sufficient emphasis on each component, is relatively unusual but may represent a more effective approach than programming that is more focused on a single activity, or that relies on linkages and referrals to other programs (or organizations) for key components. Particularly where there are multiple structural, community, and personal barriers to behavior change—including poverty, language barriers, and insufficient knowledge or the service delivery system—integrated one-stop programming, delivered with sensitivity, may be necessary.

The staffing model was another apparent strength of the program. The CHW/nurse collaboration combined clinical expertise with cultural, language, and community knowledge to create a program that was inviting, accessible, empowering, and informative. CHW programs have shown great promise in addressing diverse health concerns (Centers for Disease Control & Prevention, 2015; Cometto et al., 2018; Scott et al., 2018). A common challenge, however, is CHW training and skills (Cometto et al., 2018). The ready availability of a community-based nurse may ameliorate this challenge by offering oversight and support to the CHWs, ensuring that the health information they provide represents best practice.

This evaluation had several limitations. The sample size was relatively small and decreased slightly at follow-up; we were unable to contact members who dropped out of the program, which might have yielded important findings related to areas for improvement. Other limitations were related to the program itself, including a relatively short duration (1 year), delayed engagement on the part of the hospital, and insufficient sharing of information between the hospital and the CBO. Hospital engagement and limited data sharing were a concern because close linkages between health care providers and program staff was considered important for optimal support of participants. In addition, we did not gather information on prescribed medications and medication adherence, both of which may have independently affected outcomes. However, a strength of the evaluation was its mixed methods approach and use of multiple data sources, including focus groups, pre-post assessments, clinical indicators, program records, and a satisfaction survey. The consistency of positive findings across these methods supports the validity of results and the detailed information regarding the intervention may facilitate replication of a promising model. Another strength lies in the program itself: it was developed and implemented by a CBO, reflecting their experience in the community and a willingness to be flexible

so as to best meet client needs. The program design also reflects CBO knowledge of feasible and realistic neighborhood-based programming, given unpredictable funding and the common economic constraints of service organizations. Findings therefore can be useful to other CBOs working in low-income immigrant communities as they develop programming to address similar issues.

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REFERENCES

- Bowling, A. B., Moretti, M., Ringelheim, K., Tran, A., & Davison, K. (2016). Healthy foods, healthy families: Combining incentives and exposure interventions at urban farmers' markets to improve nutrition among recipients of US federal food assistance. *Health Promotion Perspectives, 6*(1), 10–16. <https://doi.org/10.15171/hpp.2016.02>
- Byrne, C., Kurmas, N., Burant, C. J., Utech, A., Steiber, A., & Julius, M. (2017). Cooking classes: A diabetes self-management support intervention enhancing clinical values. *Diabetes Educator, 43*(6), 600–607. <https://doi.org/10.1177/0145721717377741>
- Carter, N., Valaitis, R. K., Lam, A., Feather, J., Nicholl, J., & Cleghorn, L. (2018). Navigation delivery models and roles of navigators in primary care: A scoping literature review. *BMC Health Services Research, 18*(1), 1–13. <https://doi.org/10.1186/s12913-018-2889-0>
- Cavanagh, M., Jurkowski, J., Bozlak, C., Hastings, J., & Klein, A. (2017). Veggie Rx: An outcome evaluation of a healthy food incentive programme. *Public Health Nutrition, 20*(14), 2636–2641. <https://doi.org/10.1017/S1368980016002081>.Veggie
- Centers for Disease Control and Prevention. (2015). *Addressing chronic disease through community health workers: A policy and systems-level approach*. Retrieved from https://www.cdc.gov/dhds/docs/chw_brief.pdf
- Chen, D., Jaenicke, E. C., & Volpe, R. J. (2016). Food environments and obesity: Household diet expenditure versus food deserts. *American Journal of Public Health, 106*(5), 881–888. <https://doi.org/10.2105/AJPH.2016.303048>
- Cometto, G., Ford, N., Pfaffman-Zambruni, J., Akl, E. A., Lehmann, U., McPake, B., Ballard, M., Kok, M., Najafizada, M., Olaniran, A., Ajuebor, O., Parry, H. B., Scott, K., Albers, B., Shlonsky, A., & Taylor, D. (2018). Health policy and system support to optimise community health worker programmes: An abridged WHO guideline. *The Lancet Global Health, 6*(12), e1397–e1404. [https://doi.org/10.1016/S2214-109X\(18\)30482-0](https://doi.org/10.1016/S2214-109X(18)30482-0)
- Cooksey-Stowers, K., Schwartz, M. B., & Brownell, K. D. (2017). Food swamps predict obesity rates better than food deserts in the United

- States. *International Journal of Environmental Research and Public Health*, 14(11), 1–20. <https://doi.org/10.3390/ijerph14111366>
- Dannefer, R., Abrami, A., Rapoport, R., Sriphanlop, P., Sacks, R., & Johns, M. (2015). A mixed-methods evaluation of a SNAP-Education farmers' market-based nutrition education program. *Journal of Nutrition Education and Behavior*, 47(6), 516–525. <https://doi.org/10.1016/j.jneb.2015.08.021>
- Evans, A., Banks, K., Jennings, R., Nehme, E., Nemec, C., Sharma, S., Hussaini, A., & Yaroch, A. (2015). Increasing access to healthful foods: A qualitative study with residents of low-income communities. *International Journal of Behavioral Nutrition and Physical Activity*, 12(Suppl. 1), 1–12. <https://doi.org/10.1186/1479-5868-12-S1-S5>
- Garcia, A. L., Reardon, R., McDonald, M., & Vargas-Garcia, E. J. (2016). Community interventions to improve cooking skills and their effects on confidence and eating behaviour. *Current Nutrition Reports*, 5(4), 315–322. <https://doi.org/10.1007/s13668-016-0185-3>
- Garcia, M. L., Gatdula, N., Bonilla, E., Frank, G. C., Bird, M., Rascon, M., & Rios-Ellis, B. (2019). Engaging intergenerational Hispanics/Latinos to examine factors influencing childhood obesity using the PRECEDE-PROCEED model. *Maternal and Child Health Journal*, 23, 802–810. <https://doi.org/10.1007/s10995-018-02696-y>
- Gary-Webb, T. L., Walker, E. A., Realmuto, L., Kamler, A., Lukin, J., Tyson, W., & Weiss, L. (2018). Translation of the National Diabetes Prevention Program to engage men in disadvantaged neighborhoods in New York City: A description of Power Up for Health. *American Journal of Men's Health*. <https://doi.org/10.1177/1557988318758788>
- Gregory, C. A., & Coleman-Jensen, A. (2017). *Food insecurity, chronic disease, and health among working-age adults*. US Department of Agriculture, Economic Research Service, ERR-235(July).
- Gundersen, C., & Ziliak, J. P. (2015). Food insecurity and health outcomes. *Health Affairs*, 34(11), 1830–1839. <https://doi.org/10.1513/ev-2017-0004>
- Hinterland, K., Naidoo, M., King, L., Lewin, V., Myerson, G., Noubissi, B., Woodward, M., Gould, L. H., Gwynne, R. C., Barbot, O., & Bassett, M. T. (2018). *Community health profiles 2018, Brooklyn Community District 4: Bushwick* (Vol. 28, pp. 1–20). Retrieved from <https://www1.nyc.gov/assets/doh/downloads/pdf/data/2018chp-bx1.pdf>
- Khullar, D., & Choksi, D. A. (2018). *Health, income, & poverty: Where we are & what could help*. Health Affairs Health Policy Brief, (October 4). Retrieved from www.healthaffairs.org/briefs
- Lemstra, M., Bird, Y., Nwankwo, C., Rogers, M., & Moraros, J. (2016). Weight loss intervention adherence and factors promoting adherence: A meta-analysis. *Patient Preference and Adherence*, 10, 1547–1559. <https://doi.org/10.2147/PPA.S103649>
- Lindberg, N. M., & Stevens, V. J. (2011). Immigration and weight gain: Mexican-American women's perspectives. *Journal of Immigrant and Minority Health*, 13(1), 155–160. <https://doi.org/10.1007/s10903-009-9298-8>
- Morrill, K. E., Lopez-Pentecost, M., Ballesteros, G., Pfander, J. L., Hingle, M. D., Klimentidis, Y. C., Thomson, C. A., & Garcia, D. O. (2019). Weight loss interventions for Hispanic women in the USA: A protocol for a systematic review. *Systematic Reviews*, 8(1), 1–7. <https://doi.org/10.1186/s13643-019-1213-3>
- Mozaffarian, D. (2016). Dietary and policy priorities for cardiovascular disease, diabetes, and obesity. *Circulation*, 133(2), 187–225. <https://doi.org/10.1161/CIRCULATIONAHA.115.018585>
- Munger, A. L., Lloyd, T. D. S., Speirs, K. E., Riera, K. C., & Grutzmacher, S. K. (2015). More than just not enough: Experiences of food insecurity for Latino immigrants. *Journal of Immigrant and Minority Health*, 17(5), 1548–1556. <https://doi.org/10.1007/s10903-014-0124-6>
- Ogden, C. L., Fakhouri, T. H., Carroll, M. D., Hales, C. M., Fryar, C. D., Li, X., & Freedman, D. S. (2017). Prevalence of obesity among adults, by household income and education – United States, 2011–2014. *Morbidity and Mortality Weekly Report*, 66(50), 1369–1373. <https://doi.org/10.15585/mmwr.mm6650a1>
- Park, Y., Quinn, J., Florez, K., Jacobson, J., Neckerman, K., & Rundle, A. (2011). Hispanic immigrant women's perspective on health foods and the New York City retail food environment: A mixed-method study. *Social Science & Medicine*, 73(1), 13–21. <https://doi.org/10.1016/j.socscimed.2011.04.012>
- Perry, H. B., Zulliger, R., & Rogers, M. M. (2014). Community health workers in low-, middle-, and high-income countries: An overview of their history, recent evolution, and current effectiveness. *Annual Review of Public Health*, 35(1), 399–421. <https://doi.org/10.1146/annurev-publhealth-032013-182354>
- Realmuto, L., Kamler, A., Weiss, L., Gary-Webb, T. L., Hodge, M. E., Pagán, J. A., & Walker, E. A. (2018). Power Up for Health – Participants' perspectives on an adaptation of the National Diabetes Prevention Program to engage men. *American Journal of Men's Health*. <https://doi.org/10.1177/1557988318758786>
- Realmuto, L., Weiss, L., & Walker, E. A. (2017). *Struggling to stay on track: Participants share benefits and barriers to completing the National Diabetes Prevention Program*. The New York Academy of Medicine.
- Scott, K., Beckham, S., Gross, M., Pariyo, G., Rao, K., Cometto, G., & Perry, H. (2018). What do we know about community-based health programs? A systematic review of existing reviews on community health workers and their integration with health systems. *Human Resources for Health*, 16(1), 1–17. <https://doi.org/10.1186/s12960-018-0304-x>
- Story, M., & Duffy, E. (2020). Supporting healthy eating: Synergistic effects of nutrition education paired with policy, systems, and environmental changes. *Nestle Nutrition Institute Workshop Series*, 92, 69–81.
- Toprani, A., Li, W., & Hadler, J. L. (2016). Trends in mortality disparities by area-based poverty in New York City, 1990–2010. *Journal of Urban Health*, 93(3), 538–550. <https://doi.org/10.1007/s11524-016-0048-7>
- Vaughan, C., Collins, R., Ghosh-Dastidar, M., Beckman, R., & Dubowitz, T. (2017). Does where you shop or who you are predict what you eat? The role of stores and individual characteristics in dietary intake. *Preventive Medicine*, 100, 10–16. <https://doi.org/10.1016/j.ypmed.2017.03.015>
- Walker, E. A., Weiss, L., Gary-Webb, T. L., Realmuto, L., Kamler, A., Ravenell, J., Tejada, C., Lukin, J., & Schechter, C. B. (2018). Power Up for Health: Pilot study outcomes of a diabetes prevention program for men from disadvantaged neighborhoods. *American Journal of Men's Health*. <https://doi.org/10.1177/1557988318758787>
- Woolf, S. H., Simon, S. M., Aron, L., Zimmerman, E., Dubay, L., & Luk, K. X. (2015). *How are income and wealth linked to health and longevity?* <https://doi.org/10.1377/hlthaff.21.2.12>

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