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No-cost gym visits are associated with lower weight and blood pressure among non-Latino black and Latino participants with a diagnosis of hypertension in a multi-site demonstration project

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ABSTRACT

Well documented, persistent racial/ethnic health disparities in obesity and hypertension in the US demonstrate the continued need for interventions that focus on people of color who may be at higher risk.

We evaluated a demonstration project funded by the CDC's Racial/Ethnic Approaches to Community Health (REACH) program at four federally qualified health centers (FQHC) and YMCA fitness and wellness centers in Boston. No-cost YMCA memberships were offered from June 2014 to June 2015 to non-Latino black and Latino adults with a diagnosis of hypertension. YMCA visit data were merged with health data for 224 participants ($n = 1265$ health center visits). We assessed associations between gym visit frequency and weight, body mass index (BMI), systolic blood pressure (SBP), and diastolic blood pressure (DBP) using longitudinal time-varying linear fixed-effects models.

The total number of gym visits over the entire program duration was 5.5, while the conditional total number of visits (after the first gym visit has been made) was 17.3. Having visited the gym at least 10 times before an FQHC exam was, on average, associated with lower weight (1.19 kg, $p = 0.01$), lower BMI (0.43 kg/m^2, $p = 0.01$) and reductions in SBP (−3.20 mm Hg, $p = 0.01$) and DBP (−2.06 mm Hg $p = 0.01$). Having visited the gym an average of 1.4 times per month (study average) was associated with reductions in weight, BMI, and DBP.

No-cost gym visits were associated with improved weight and blood pressure in hypertensive non-Latino black and Latino adults in this program. Additional evaluation is necessary to assess the sustainability of these effects.

1. Introduction

Persistent racial/ethnic health disparities in the United States indicate that optimal health still remains out of reach for many people of color and highlights the need for continued policy, system, and environmental interventions aimed at reducing disease burden among vulnerable populations. Hypertension and obesity, leading modifiable risk factors for cardiovascular disease mortality, are among a host of health outcomes with consistently higher prevalence in some communities of color (Frieden, 2013; National Center for Health Statistics, 2016). Hypertension affects approximately 30% of the adult population in the US with the highest rate reported among the non-Latino black population (43.3%), and the lowest rates of controlled blood pressure reported among Latino (34.4%) and non-Latino black populations (42.5%) (National Center for Health Statistics, 2016; Yoon et al., 2010). Similarly, obesity affects over one-third of US adults with the highest rates found among non-Latino black adults (48.0%) followed by Latino adults (42.6%) and non-Latino white adults (34.6%) (National Center for Health Statistics, 2016; *CDC Adult Obesity Facts*, 2015; Ogden et al., 2014). The prevalence of hypertension progressively increases with body mass index (BMI) (Artham et al., 2009). In one study, the prevalence of hypertension increased from 15% to 42% in men and 15% to

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38% in women as BMI increased from healthy weight range to obese range (Brown et al., 2000). The same study also demonstrated that this relationship is more pronounced among black men and women (Brown et al., 2000).

Engaging in moderate to vigorous physical activity has been shown to lower risk of hypertension and obesity (Brown et al., 2000; Chobanian et al., 2003; Wallace, 2003; Whelton et al., 2002; Physical Activity Guidelines Advisory Committee Report, 2009; Sallis et al., 2012; Crump et al., 2016; Vuori et al., 2013; Jensen et al., 2013). Physical activity can effectively prevent and treat both conditions (Chobanian et al., 2003; Wallace, 2003; Whelton et al., 2002; Physical Activity Guidelines Advisory Committee Report, 2009; Sallis et al., 2012; Crump et al., 2016; Vuori et al., 2013; Jensen et al., 2013; Lavie et al., 2016). However, the majority of adults do not achieve the recommended levels of physical activity (Sallis et al., 2012; Bauman et al., 2012). In the US, levels of physical activity are lower among non-Latino black and Latino adults and among low-income populations, when compared to white adults and higher income groups, respectively, which contribute to higher prevalence of hypertension and obesity (Carlson et al., 2008; Saffer et al., 2013; *Facts About Physical Activity*, 2014). A complex set of cultural, social, and environmental challenges may interfere with achieving recommended levels of physical activity among communities of color and low-income populations (Van Duyn et al., 2007; Whitt-Glover et al., 2009; Liu et al., 2012; Kumanyika et al., 2014). In addition, there is a relative paucity of effective physical activity interventions designed to reach specific racial/ethnic groups (Bauman et al., 2012; Van Duyn et al., 2007; Whitt-Glover et al., 2009; Liu et al., 2012; Kumanyika et al., 2014).

Local partnerships involving public health agencies, healthcare providers, community-based organizations, and community members may be better suited to address the complex barriers to achieving recommended levels of physical activity (Auerbach, 2016). Equipped with experiences from a previous pilot project, the Boston Public Health Commission partnered with four community health care centers and the YMCA of Greater Boston, which is an international community-centered organization that focuses on strengthening communities and healthy living, to implement a physical activity intervention from June 2014 to June 2015. The project provided no-cost YMCA fitness and wellness center memberships to eligible patients referred from four federally-qualified health centers (FQHC) in Boston.

To evaluate this project, we linked existing information on subsidized membership and visits to the YMCA fitness and wellness center with electronic health record (EHR) data, and examined the association between YMCA fitness and wellness center membership and visit frequency with changes in weight, body mass index (BMI), systolic blood pressure (SBP) and diastolic blood pressure (DBP). We hypothesized that visits to the YMCA fitness and wellness center would be associated with reduced body mass index and blood pressure measurements.

2. Methods

We analyzed existing data to assess the association between YMCA utilization, and BMI and blood pressure outcomes among enrolled participants. The Boston University Medical Center Institutional Review Board granted this evaluation an exemption from human subjects research oversight because the analyses involved only secondary data and no contact with human subjects occurred.

2.1. Program setting and enrollment

The multi-site REACH demonstration project, “Get Active!,” was implemented at four local FQHC and YMCA sites in Boston, Massachusetts from June 15, 2014 to June 15, 2015. The FQHC were located in four Boston neighborhoods with disproportionately more non-Latino black and Latino residents. All non-Latino black and Latino adult patients (18 years or older) with an International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9 CM) diagnosis code for hypertension (401) served by the FQHC, regardless of blood pressure medication status, were eligible for a no-cost YMCA fitness and wellness center membership for up to one year. Primary recruitment methods included direct outreach to patients, recruitment from hypertension support groups within the FQHC, and direct referral from providers.

2.2. YMCA gym membership and visits

The YMCA of Greater Boston is an association of community-based service centers with 13 locations serving the Greater Boston metropolitan area. Each center has an indoor gym, a wellness center, an indoor pool (except one location), and offers group exercise classes. The REACH program participants were offered access to the YMCA's fitness and wellness centers in the form of a no-cost, three-month membership to the YMCA and were directed to visit one of four YMCA locations in order to activate their membership. After membership activation, participants could access any YMCA location within the Greater Boston network. Participants were offered an additional nine-month no-cost membership extension if they used the fitness and wellness center 14 times during the initial three-month membership period, although exceptions were made to these extension requirements on a case-by-case basis.

Visits to the YMCA fitness and wellness centers (hereafter referred to as gym visits) were tracked by an electronic centralized tracking system which required participants to physically swipe their membership cards at the facility entrance. This centralized tracking system generated a data set with the date (month, day, and year) for every gym visit by a participant.

2.3. Health outcomes

We assessed four health outcomes extracted from the EHR: weight (kg), BMI (kg/m^2), SBP (mm Hg), and DBP (mm Hg). Each health outcome was measured by trained clinical staff at the FQHC, except for BMI, which was computed from the clinically measured height and weight. Because case-wise deletion reduced power without altering the magnitude of the estimated coefficients, we used all available health outcome observations available.

2.4. Linked data sets

To assess the association of gym membership only and gym visit frequency with health outcomes, a limited set of health, demographic, and health insurance status data with clinic measurement dates was obtained from the FQHC for each participant from January 1, 2014 to June 15, 2015 – which includes a six-month period of time before the start of the intervention to ensure at least one clinical measurement prior to or at enrollment. There was a wide range in the number of clinical measurements per participant as well as intervals between clinical measurements as the program did not require clinical exams at specific intervals after enrollment. These data were merged with the gym visit data using random identifier, assigned to each individual by the FQHC, and the date of gym visit (year, month, and day). This resulted in a data set containing clinically measured health outcomes and electronically tracked gym visit records from January 1, 2014 to June 15, 2015.

2.5. Statistical methods and models

Taking advantage of the longitudinal data, we used time-varying linear fixed-effects model that assigned individual fixed-effects (i.e. fixed intercepts) to each patient to assess the association between no-cost gym visits with health outcomes. The linear fixed-effects model used here differs from a typical linear mixed-model that assigns random intercepts to each patient, which requires the assumption that the intercepts were uncorrelated with the independent variables. We conducted the Hausman test, which rejected ($p < 0.01$) the null hypothesis that they were uncorrelated. Therefore, we report the results from the linear fixed-effects model, which limited the potential estimation bias due to omitted variables or sample selection, assuming they remained constant over time. By design, other constant covariates such as race, gender, and FQHC that did not vary over time were also eliminated from the model.

The estimated linear time-varying fixed-effects equation takes the following form,

$$Y_{it} = \alpha X_{it} + \beta Z_{it} + u_i + \epsilon_{it} \quad (1)$$

where Y_{it} is one of four measured health outcomes for individual i at time t, X_{it} is the program intervention (i.e., gym visits), Z_{it} is the vector of other time-varying covariates included in the model for individual i at time t, u_i is the individual-specific error term that takes account of unobserved individual heterogeneity, and ϵ_{it} is the generic error term. α and β are the vectors containing the estimated coefficients.

We constructed various measures for membership and gym visits to assess for possible associations. To assess the effectiveness of providing gym membership, we constructed a longitudinal indicator that equaled 1 if a clinical measurement was obtained after the participant had obtained gym membership and 0 otherwise. To assess the role of gym membership, we constructed a binary indicator that equaled 1 if enrolled participants obtained a membership and visited the gym at least once and 0 if participants obtained a membership but had zero gym visits (membership only). To assess the association with gym visits, we constructed longitudinal binary terms (Yes/No with No as reference group) for having at least one gym visit and for having at least 10-gym visits at time of FQHC exam. To further assess this association, we calculated the average number of gym visits per month by dividing the number of gym visits by total days enrolled in the program and multiplying by 30. We also modeled the gym visit frequency at the time of FQHC exam as a continuous variable. All measures for gym visits were evaluated in separate models. All models included the following covariates: age (5 age categories), seasons (spring, summer, fall, and winter), and insurance status (public, private, and self-pay). As there is some evidence to suggest individuals with higher BMI may be less able to engage in physical activity or lose weight, we also conducted subpopulation analyses to assess the association between having at least 10-gym visits and health outcomes by BMI [lower BMI (BMI < 35) vs. higher BMI (BMI ≥ 35)] (Vincent et al., 2010; Benito et al., 2017; Goran et al., 2000).

The 95% confidence intervals were obtained using the Huber-White robust standard errors that were clustered at individual-level to reflect the repeated measurements taken from the same individuals within each FQHC. We used Stata 14 to perform the linear fixed-effects models using the xtreg procedure.

3. Results

Table 1 presents participant demographic characteristics and gym membership status. Of the 382 participants enrolled, 224 participants had YMCA and EHR data that could be linked and had at least two clinical measurements (i.e. one clinical measurement at or before enrollment and at least one clinical measurement after enrollment). A comparison of the successfully linked analysis sample ($N = 224$) to the sample in which YMCA and EHR could not be linked or participants did not have EHR data available after program enrollment ($N = 158$) indicated no significant differences in age, race, sex, and insurance status. Of the 224 study participants in the analysis sample, average age at enrollment was 55.1 years of age. In both linked analytic and unlinked samples, a higher proportion of participants were female, non-Latino black, and enrolled in a public insurance program. Fifty-five participants (14%) renewed their gym membership by visiting the gym 14 times or more over a three-month period. The distribution of age, race, sex and insurance status did not differ significantly between those who renewed their membership for an additional 9 months and those who did not (data not shown).

Table 2 contains the summary statistics for gym memberships and health outcomes across all visits. The 224 participants in analysis sample contributed 1265 clinical measurements for the SBP and DBP analyses and 1124 measurements for weight and BMI analyses. Of the

Table 1
Demographic characteristics of REACH participants at the time of enrollment by electronic health record (EHR) and membership status, Boston, 2014–2015.

	All $n = 382$	No EHR $n = 158$ [41.4%]	EHR linked $n = 224$ [58.6%]	
			Gym visits = 0 $n = 75$ [19.6%]	Gym visits ≥ 1 $n = 149$ [39.0%]
Gender (%)				
Male	36.9	36.7	37.3	36.9
Female	63.1	63.3	62.3	63.1
Race/ethnicity (%)				
Non-Latino Black	76.4	78.4	70.4	77.2
Latino	17.3	14.6	22.5	17.4
Multiple/other	0.7	0.6	2.7	0
Age at enrollment years (SD)	55.2 (11.1)	54.7 (11.5)	55.6 (12.3)	54.7 (10.2)
Insurance status at enrollment (%)				
Public	67.3	64.6	68.0	69.8
Private	26.4	28.5	26.7	24.8
Self-insured	6.3	7.0	5.3	5.4

Note: Percentages may not always add up to 100% due to rounding.

Table 2
Gym membership and visit status, blood pressure, and BMI at the time of clinical visit, Boston, 2014–2015.

	All enrolled	BMI < 35	BMI ≥ 35
	$n = 1265$ visits	$n = 720$ visits	$n = 545$ visits
Enrollment and gym visits (%)			
Currently enrolled in REACH program	64.3	63.9	65.1
Have visited gym 1 time or more	32.0	33.1	30.6
Have visited gym 10 times or more	16.0	18.5	12.8
Gym visit frequency mean (SD)			
Gym visit frequency (includes 0 visits)	5.5 (13.2)	6.3 (13.6)	4.6 (12.6)
Conditional gym visit frequency (excludes 0 visits)	17.3 (18.1)	18.9 (17.9)	15.0 (19.2)
Total number of days enrolled	84.8 (93.8)	80.2 (91.8)	90.7 (96.2)
Average number of gym visit per month	1.4 (3.0)	1.5 (3.0)	1.2 (2.9)
Obesity measures			
Weight (kg) mean (SD)	98.3 (22.3)	81.0 (11.7)	111.9 (21.6)
Height (m) mean (SD)	1.65 (0.1)	1.66 (0.1)	1.64 (0.1)
BMI^2 (kg/m^2) mean (SD)	34.3 (7.8)	29.5 (3.3)	41.4 (7.2)
Obese (≥30 kg/m^2) (%)	68.9	48.6	99.3
Hypertension measures			
SBP (mm Hg) mean (SD)	133.4 (16.9)	133.4 (17.7)	133.5 (15.8)
DBP (mm Hg) mean (SD)	81.7 (10.2)	81.6 (10.1)	82.0 (10.5)
High blood pressure (%)[a]	41.1	43.0	39.3

Body mass index (BMI), systolic blood pressure (SBP), diastolic blood pressure (DBP),
[a] High blood pressure is defined as SBP ≥ 140 or DBP ≥ 90.

Table 3
The estimated impact of gym membership and gym visits on health outcomes among REACH participants, Boston, 2014–2015.

Impact of YMCA membership and visits	(Frieden, 2013)	(National Center for Health Statistics, 2016)	(Yoon et al., 2010)	(*CDC Adult Obesity Facts*, 2015)
	Weight (kg)	BMI (kg/m^2)	Systolic blood pressure (mm Hg)	Diastolic blood pressure (mm Hg)
Gym membership				
Estimate (95% CI)	−0.27 (−0.86, 0.33)	−0.12 (−0.32, 0.08)	0.06 (−1.90, 2.02)	−0.78 (−1.96, 0.40)
p-Value	0.37	0.25	0.95	0.20
N	1124	1124	1265	1265
Ever visited gym				
Estimate (95% CI)	−0.87 (−1.58, −0.15)	−0.34 (−0.60, −0.07)	−2.74 (−5.02, −0.46)	−1.98 (−3.40, −0.55)
p-Value	0.02	0.01	0.02	0.007
N	1124	1124	1265	1265
Visited gym 10 times or more				
Estimate (95% CI)	−1.19 (−2.11, −0.27)	−0.43 (−0.78, −0.09)	−3.20 (−5.68, −0.72)	−2.06 (−3.84, −0.29)
p-Value	0.01	0.01	0.01	0.02
n	1124	1124	1265	1265
Average gym visits per month				
Estimate (95% CI)	−0.143 (−0.26, −0.026)	−0.052 (−0.10, −0.01)	−0.325 (−0.67, 0.02)	−0.244 (−0.45, −0.04)
p-Value	0.02	0.02	0.07	0.02
N	1124	1124	1265	1265
Gym visit frequency (continuous scale)				
Estimate (95% CI)	−0.037 (−0.07, −0.01)	−0.014 (−0.03, −0.00)	−0.066 (−0.13, −0.00)	−0.063 (−0.11, −0.02)
p-Value	0.02	0.03	0.04	0.005
N	1124	1124	1265	1265

Note: Each coefficient represents the result of separately estimated models. All models adjusted for age, year, season, and insurance status. Parentheses contain 95% confidence intervals based on robust standard errors clustered at individual.

clinical measurements, 35.7% occurred before program enrollment and 64.3% after. The total number of gym visits over the entire program duration was 5.5, while the conditional total number of gym visits (after the first gym visit has been made) was 17.3. The average number of days enrolled was approximately 85 and the average number of visits to the gym per month was 1.4 visits. The average weight and BMI were 98.3 kg and 34.3 kg/m^2, respectively. The majority (68.9%) of BMI measurements were categorized as obese. While all enrolled individuals had a diagnosis of hypertension, 41.1% of BP measurements recorded during the program period were actually classified as hypertensive. Hypertensive patients may have normal blood pressure on a given day for a variety of reasons including taking anti-hypertensive medication.

Table 3 presents the estimated impact of gym membership only and gym visits with health outcomes resulting from the time-varying linear fixed-effects regression models. Gym membership only, i.e. membership but had zero gym visits, was not significantly associated with the health outcomes. Having visited the YMCA at least once was, on average, associated with lower weight (−0.87 kg, $p = 0.02$), lower BMI (−0.34, $p = 0.01$), lower SBP (−2.74 mm Hg, $p = 0.02$) and lower DBP (−1.98 mm Hg, $p = 0.007$) at the time of clinical measurement. Having visited the gym at least 10 times before an FQHC exam was, on average, associated with lower weight (−1.19 kg, $p = 0.01$), lower BMI (−0.43 kg/m^2, $p = 0.01$) and reductions in SBP (−3.20 mm Hg, $p = 0.01$) and DBP (−2.06 mm Hg, $p = 0.01$). Having visited the gym an average of 1.4 times in 30 days (study average) was associated with significant reductions in weight (−0.14 kg, $p = 0.02$), BMI (−0.05 kg/m^2, $p = 0.02$), and diastolic blood pressure (−0.24 mm Hg, $p = 0.02$). Based on the continuous measure, each gym visit was associated with 0.04 kg reduction in weight, 0.01 reduction in BMI, and approximately 0.06 to 0.07 mm Hg reduction in blood pressure.

We further assessed for interaction effects between BMI status at enrollment and having visited the gym at least 10 times. While the stratified analysis demonstrated differences in health impacts based on BMI status at enrollment (BMI < 35 vs BMI ≥ 35), an analysis of the interaction between BMI status at enrollment and having visited the gym at least 10 times revealed that BMI status at enrollment did not significantly modify the association between 10 or more gym visits and the four health outcomes (results not shown).

4. Discussion

In this evaluation of a physical activity referral program that connected non-Latino black and Latino community health center patients in Boston to local YMCA fitness and wellness centers, we found that frequent gym visits to the local YMCA were associated with lower weight, BMI, SBP, and DBP. Specifically, having visited the gym at least once, 1.4 times every month, and at least 10 times as well as visits on a continuous scale were associated with significant decreases in weight, BMI, and blood pressure measurements. While improved weight and blood pressure outcomes were identified across multiple measures of gym visit frequency, we found no improvement in health outcomes for those who were provided with a no-cost membership to the YMCA but did not visit the YMCA. While prior research suggests that the effectiveness of exercise is attenuated among individuals with BMI higher than 35, we found BMI status at enrollment (BMI < 35 vs BMI ≥ 35) did not significantly modify the association between gym visits and weight, BMI, SBP or DBP (Vincent et al., 2010; Benito et al., 2017; Goran et al., 2000).

While previous studies have assessed or are currently underway to assess the impact of YMCA programs on diabetes and/or weight loss, few have addressed the impact of YMCA-based programs on hypertension, and none have done so using daily gym visit data or conducted an assessment by BMI status (Foley et al., 2012; Annesi, 2013; Ackermann et al., 2015; Parra-Medina et al., 2015; Hingle et al., 2015; Liss et al., 2016). Consistent with the findings from two previous studies of YMCA programs, our evaluation identified an association between participation in YMCA-based interventions and weight loss (Ackermann et al., 2015; Parra-Medina et al., 2015).

This evaluation was limited by a number of factors. First, while the finding of significant decreases in weight, BMI, and blood pressure measurements consistently across multiple measures of gym visit frequency (visited at least once, visited 1.4 times every month, visit at least 10 times, continuous scale) suggests the intervention played a role in improved outcomes, we cannot rule out the role of unmeasured confounders such as medications, diet, and motivation, which have been associated with changes in weight and blood pressure (Chobanian et al., 2003; Upadhyay et al., 2018). However, the use of longitudinal individual fixed-effects models limited bias due to sample selection or omitted variables, such as medication and diet. Second, a proportion of enrolled individuals who did not have linked EHR data or did not have BP and BMI measurements after enrollment in the program were not included in the analysis. However, a comparison of demographic data between this group and those with linked EHR data who had measurements after enrollment revealed no significant differences. Third, the frequency of gym visits rather than actual activity at the gym was used to measure the degree of physical activity. The duration and intensity of exercise, which have been associated with weight loss, was not directly measured, and not all participants may have engaged in physical activity at the YMCA (Chambliss, 2005). However, we found improved health outcomes were associated with gym visits but not with membership only (zero gym visits). Therefore, YMCA gym visits rather than gym membership were the critical component of the REACH program. Finally, our study is limited by a lack of a comparison group and non-random selection of participants. Future studies should consider randomization and appropriate comparison groups.

This evaluation identified programmatic limitations. The lack of standard recruitment processes contributed to heterogeneity in the number of participants enrolled. Additionally, the absence of a standardized mechanism to motivate and encourage gym use among program participants beyond traditional membership initiation may have limited program retention and impact. The use of longitudinal fixed-effects models minimized site to site differences in recruitment, retention, and patient characteristics, assuming that the participants did not move between the FQHC during the study period.

The findings from this evaluation may have a number of important implications for prescribing gym-based physical activity to improve health outcomes among hypertensive people of color and connecting community health center patients to a community resource. First, the improved weight and blood pressure outcomes in non-Latino black and Latino adults, who are at high risk for obesity and hypertension, suggests that interventions focused on populations of color could be an important part of population-based strategies to address racial/ethnic health disparities and highlights the need for additional research (Bock et al., 2014; Cleland et al., 2012). Second, while cost has been identified as a barrier to physical activity in previous studies, we found that eliminating cost as a barrier to program participation was not sufficient to get all program enrollees to activate their YMCA memberships (Rimmer et al., 2008; Reichert et al., 2007). Behavioral weight management, peer support, program monitoring, and personal incentives may be necessary to promote no-cost gym and fitness center use (Bock et al., 2014; Bray et al., 2016; Charness and Gneezy, 2009; Patel et al., 2011). Subsequent qualitative research might be helpful in exploring other relevant barriers among black and Latino adults.

While our evaluation found a measurable impact on weight and blood pressure outcomes in the 1 year follow-up period, the longer term (more than one year) impact of the program remains to be known. This highlights the need to measure longer term impact of physical activity interventions. As with many physical activity interventions, sustained behavior change and long-term follow-up are essential to understanding the lasting health impacts (Jakicic, 2009; Muller-Riemenschneider et al., 2008; Franz et al., 2007).

Although our evaluation did not identify an interaction effect of BMI status and gym visit frequency, additional research should examine the possibility of differential impact of physical activity interventions on those individuals with higher BMI at baseline.

The role of cost must be considered in the design of sustainable fitness center membership interventions. An unsubsidized three-month YMCA membership in Boston can cost up to $129, which could make it unaffordable as a long-term physical activity strategy. In a study of YMCA memberships among urban community health center patients, Silva et al. found that after the introduction of a $10 per month membership co-pay, approximately 80% of participants who had previously had a no-cost membership dropped out of the program (Silva et al., 2012). The authors further found that the addition of even a modest monthly fee changed the participant pool from those at risk of hypertension to younger males who exercised more frequently. In order to preserve engagement with higher-risk participants, the authors concluded that no-cost options should be made available to them (Silva et al., 2012). Health insurance coverage for gym membership fees is one potential mechanism to reduce cost-related barriers. Private health insurance providers are increasingly covering gym membership fees for their participants (Koning Beals, 2012). However, similar benefits have not been widely offered by public health insurance programs whose members face even greater financial difficulties.

This multi-site demonstration project was built on cross-sector collaboration between the four FQHC, the YMCA, and the local public health department. This collaboration supported patients as they translated recommendations from their health care providers into action. Cross-sector collaborations are well positioned to support sustainable access to health-promoting assets needed to improve health status and eliminate health disparities (Auerbach, 2016; Dietz et al., 2015).

4.1. Conclusions

This evaluation found that frequent gym visits, which were made possible by fully subsidized gym memberships, were associated with lower weight and blood pressure among enrolled non-Latino black and Latino hypertensive adults in Boston. Additional research is required to understand the role gym facilities may play in achieving sustained reductions in weight and blood pressure among people of color in an urban setting.

Conflict of interest

The authors declare there is no conflict of interest.

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