Linking patients with community resources: use of a free YMCA membership among low-income black women

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Abstract

Given the increasing interest in expanding obesity prevention efforts to cover community-based programs, we examined whether individuals would access a YMCA for physical activity promotion. We provided a no-cost 12-month YMCA membership to socioeconomically disadvantaged black women who were randomized to the intervention arm of a weight gain prevention trial ($n = 91$). Analyses examined associations of membership activation and use with baseline psychosocial, contextual, health-related, and sociodemographic factors. Many participants (70.3 %) activated their memberships; however, use was low (42.2 % had no subsequent visits, 46.9 % had one to ten visits). There were no predictors of membership activation, but individuals living below/borderline the federal poverty line were more likely to use the center (1+ visits), as were those who met physical activity guidelines at baseline. More comprehensive and intensive interventions may be necessary to promote use of community resources—even when provided free—among high-risk populations of women with obesity that live in rural areas of the USA.

Keywords

Physical activity, African American women, Community-based resources, YMCA intervention

INTRODUCTION

The prevalence of obesity is disproportionately greater among black women compared to other racial/ethnic groups [1]. It is estimated that over 70 % of black women in the USA will be obese by 2020 [2]. Compared to women in other racial/ethnic groups, black women have lower levels of physical activity and higher rates of sedentary behaviors [3], placing them at increased risk of negative health outcomes associated with obesity, physical inactivity, and sedentary behaviors [4–7]. Thus, there is a clear need for programs meant to increase physical activity among black women. In addition, obesity rates are higher in rural areas than in urban areas [8], and although results are not entirely consistent [9], individuals living in rural areas of the USA are less physically active than are people in urban areas [10].

Access to community-based resources might help minimize many of the noted barriers to physical activity [11–

Implications

Practice: Low-income black women who are overweight/obese and live in rural areas of the USA who enroll in an intervention may activate no-cost YMCA memberships, but this study demonstrates that subsequent utilization of memberships is low and suggests there is a need for comprehensive and intensive interventions to promote the use of community resources—even when provided free—among high-risk populations of black women.

Policy: The results of this present study suggest that facilitating access to community-based facilities in rural areas of the USA through the provision of no-cost gym memberships will not result in sustained use of the facilities or provide the needed remedy to reduce physical inactivity.

Research: Research is needed to identify salient intervention messages and strategies that will motivate low-income black women who are overweight and obese and living in rural areas of the USA to access community-based resources for sustained physical activity when provided for free as part of an intervention.

14]. Yet, few studies have provided study participants with access to community-based exercise facilities, and it is not yet known if people will use these resources if made available. Waterman et al. determined that 50 % of female community health center (CHC) patients at high risk for cardiovascular disease in Boston, Massachusetts activated a free 3-month membership at an exercise facility affiliated with their CHC [15]. The majority of the sample was black (83.6 %) and black women were 58 % more likely to activate their memberships than were women classified as “other.” Use of the exercise facility postmembership activation was low; 19 % of participants had no subsequent visits and 71 % were classified as having low attendance (1–17 visits) over the 3 months. Among women who had at least one visit, use declined over the 3-month period, and no predictors of attendance were identified. However, it is not known whether these findings extend to rural populations or how longer access

to exercise facilities may impact utilization. This information is needed, as there has been interest in expanding obesity prevention efforts to include coverage of community-based programs [16, 17].

Obesity is difficult to treat and weight loss is hard to maintain [18–20], especially for black women who have smaller weight loss in randomized controlled trials of evidence-based interventions than their white counterparts [21, 22]. Additionally, compared to white women, black women may have a greater acceptance of overweight, tolerance for heavier body weight, and may be less likely to recognize their overweight/obese status [23–25]. Thus, we recently conducted The Shape Program, a randomized controlled trial of a multicomponent intervention designed to prevent weight gain among overweight and obese black women by leveraging awareness of and resources from the primary care setting [26]. Intervention participants received no-cost annual memberships to their local YMCAs, and the purpose of this study, a secondary data analyses, was to examine the predictors of activation and utilization of the YMCA memberships among this sample.

METHODS

The Shape Program

The Shape Program (Shape), a 12-month intervention conducted between 2009 and 2012 [26], was found to prevent weight gain at the end of the intervention period and at 18-month follow-up [27]. Shape was an individual-level intervention created in collaboration with a partnering CHC system. The intervention was designed to be embedded within the CHC, and black female patients aged 25–44 with a body mass index (BMI) of 25–34.9 kg/m² were recruited from the partnering CHC system. We leveraged our partnership with the healthcare system by sending recruitment materials on the CHC's letterhead, having recruitment letters signed by the medical director, and by having research assistants identifying themselves as being affiliated with Shape and the CHC system during recruitment and scheduling calls. Additionally, most study visits and assessments were conducted at participating CHCs. Before randomization, accelerometers (Actical; Philips Respironics, Inc.; Bend, OR USA) were placed on the participants' non-dominant wrists, and the participants were instructed to wear the monitors continuously until their return visits approximately 14 days later. Afterwards, participants were randomized to either the Shape intervention or to usual care, and additional assessments were completed at 6, 12, and 18 months postenrollment. The study was approved by the Institutional Review Board at Duke University.

Intervention components included (a) tailored behavior change goals to promote the prevention of weight gain, (b) self-monitoring of behavior change goals via weekly interactive voice response (IVR) telephone calls, (c) skill training materials, and (d) monthly telephone coaching. Each intervention component

was designed to reinforce the other components and all were viewed as being equally important. The intervention was designed to prevent weight gain and focused on nutrition/diet and physical activity equally, although more of the behavior change goals focused on nutrition/diet.

The intervention focused on tailored behavior change goals that were designed to produce a slight energy deficit, be readily achievable, and easily monitored. Participants were assigned three behavior change goals: one or two that focused on diet/nutrition (e.g., no sugar-sweetened beverages, no fast food) and one or two that focused on physical activity (e.g., walking 7000 steps/day; going to the YMCA three times per week) from a library of 21 goals. Participants' goals were assigned based on an algorithm that utilized the participants' need for change, self-efficacy for each behavioral change goal, and readiness for change for each behavioral change during the participant's baseline and 6-month. The algorithm selected goals where participants indicated the highest level of self-efficacy and readiness for change, limited perceived barriers, and within the target caloric deficit; goals were changed every 8 weeks. Participants self-monitored their goals once a week by completing an IVR call that occurred at a prearranged set time [28]. Skill training was provided through tailored print materials that offered information on a variety of topics such as identifying and negotiating barriers, engaging social support, implementing social environmental change, identifying ways to be active at work, and findings ways to stay motivated. Registered dietitians (referred to as health coaches) trained in motivational interviewing and employed at the participating CHCs completed the coaching calls. During the call, health coaches utilized principles of motivational interviewing [29] when reviewing self-monitoring data and reinforcing the importance of monitoring behaviors, aiding participants in identifying potential barriers, and devising strategies to overcome barriers. Additionally, health coaches helped participants address barriers and identify enablers to eating healthfully and being active through skill building (e.g., time management).

YMCA memberships

In addition to the above intervention components, all intervention participants were provided with free 12-month memberships to one of five local YMCAs, with participants selecting their preferred facilities. Individuals activated their memberships by visiting their chosen YMCA and completing a brief set of paperwork. Upon activating their memberships, participants received a YMCA membership card that was used to access the YMCA for subsequent visits. During the monthly coaching calls, health coaches encouraged participants to activate and use their YMCA memberships to achieve their physical activity goals. They also aided participants in developing strategies to address barriers specific to utilization of the YMCA (e.g., lack

of time, planning ahead, child care). Approximately 40 vouchers for 60 min of YMCA-based childcare were distributed over the course of the intervention to participants who indicated that childcare was a barrier to their use of the YMCA. The participants also were reminded about and encouraged to use the YMCA membership through the skill building materials and IVR calls.

MEASURES

Activation and frequency of use of YMCA membership

At the end of the intervention period, we gathered information from each of the participating YMCAs about the number of Shape participants who activated their memberships by obtaining a membership card. We also collected information about the number of visits recorded for each participant who activated her membership. These data were used to determine whether participants activated their memberships (yes, no), along with frequency of use of membership postactivation over the 12-month intervention period. Frequency of use varied greatly (from 0 to 48 visits), but 81 % of those who activated memberships used their membership three times or fewer. Because of this, we dichotomized use (0, 1+ times) for our bivariate analysis but created three frequency categories based on the distribution of the data (0, 1–10, 11+ times) for descriptive purposes.

Predictors of activation and use of YMCA membership

We examined baseline psychosocial, contextual, health-related—including physical activity—and socio-demographic factors that might predict activation and use of YMCA membership.

Psychosocial factors—Self-efficacy for physical activity was assessed by five items that assessed participants' confidence in their ability to exercise when tired, in a bad mood, short on time, on vacation, or when it is raining/snowing. The items were summed and then divided by five to create a summary score (range 0–5) [30]. Perceived weight status was measured by a single item that asked participants to assess their weight (slightly underweight, about right weight, slightly overweight, overweight) [31].

Contextual factors—The Medical Outcomes Study Social Support Survey (MOS-SSS) was used to determine availability of emotional/informational, tangible, affectionate, and positive social interaction [32]. Perceived environmental support for physical activity was assessed using items from the Boehmer/Brownson survey that asked participants, among other things, how strongly they agreed or disagreed with the statement that their communities have places to be physically active (not including streets for walking or jogging) and whether their communities have access to equipment for physical activity [33]. Participants also reported their perception of their communities as a place for physical activity and how safe from

traffic they felt when walking or biking in their communities [33].

Health-related factors—Examined health-related factors included perceived health status, body mass index, and physical activity. Perceived health status was assessed using the one-item assessment from the Medical Outcomes Study Short-Form [34]. Body mass index was calculated from weight and height data collected by study staff. Weight was measured to the nearest 0.1 kg using a portable electronic scale (Seca Model 876), and height was measured using a calibrated wall-mounted stadiometer (Seca 214). Physical activity was measured via accelerometer, and data were screened and processed using procedures consistent with recent recommendations [35] that have been previously utilized [36]. Complete files, defined as those in which participants wore the monitor for ≥ 10 days, were transformed from 15-s to 1-min epochs and then into units of activity energy expenditure (AEE; kcal/kg/min) using a 2R calibration algorithm [37]. Data were then summarized into minutes of moderate-vigorous AEE_{MV}, and 10-min bouts of activity. These data were then used to determine whether participants met physical activity recommendation (150 min of moderate physical activity per week) using 10-min bouts.

Sociodemographic measures—Examined demographic variables included age, marital status, educational attainment, income, and number of children in household using standard items. The last two measures were used to determine if participants' household incomes were above or below/borderline the poverty line based on the 2010 federal poverty guidelines for income and household size.

Reasons for not using YMCA membership—On the 12-month survey, participants who reported using their memberships less than twice in a typical week were asked an open-ended question regarding why they did not use their YMCA memberships. All responses were coded by theme and then collapsed into categories. If multiple themes were present in one response, they were coded into multiple categories.

Analysis

The sample included only participants randomized to the intervention arm ($n=91$). Descriptive statistics were conducted to describe the sample and to characterize participants' activation of YMCA memberships as well as frequency and sustained use of the gym membership over the 12-month intervention period. Bivariate logistic regression analyses determined the associations between the examined predictor variables and (a) activation of membership and (b) frequency of use of membership (0 times, 1+).

Results

Women participating in this study had a mean body mass index of 30.1 (SD = 2.7) kg/m² and a

mean age of 35.6 (SD = 5.5) years (Table 1). More than half (67.4 %, $n=60$) were childless, and approximately three-quarters (72.7 %, $n=64$) were employed, although 58.9 % ($n=53$) lived below/borderline to the federal poverty line. Most (80 %, $n=72$) owned a car. About one third (34.1 %, $n=$

27) viewed their communities as places that were not very pleasant/not at all pleasant for physical activity, as lacking in places to be physically active, and lacking equipment for physical activity. Furthermore, 35.9 % ($n=28$) viewed their communities as not being safe for walking or biking.

Table 1 | Baseline characteristics of participants in the Shape Program randomized to the Shape intervention ($n=91$)^a

	<i>N</i> (%) or mean $\pm$ standard deviation (SD)
Age [mean $\pm$ SD]	35.6 $\pm$ 5.5
Education	
<High school diploma	9 (10.1)
High school/GED	22 (24.7)
Some college or more	58 (65.2)
Employment status	
Employed	64 (72.7)
Unemployed	24 (27.3)
Poverty level	
Above	37 (41.1)
Below/borderline	53 (58.9)
Children in household	
None	60 (67.4)
1 child or more	29 (32.6)
Psychosocial factors	
Self-efficacy for physical activity (PA) [mean $\pm$ SD]	2.5 $\pm$ 0.8
Perceived weight	
Slightly underweight/about right weight	13 (15.1)
Slightly overweight	28 (32.6)
Overweight	45 (52.3)
Social support [mean $\pm$ SD]	71.9 $\pm$ 17.9
Contextual factors	
Own car	
Yes	72 (80)
No, but have access to a car	11 (12.2)
No	7 (7.8)
Places to be physically active	
Strongly agree/agree	59 (68.6)
Strongly disagree/disagree	27 (31.4)
Equipment available to be physically active	
Strongly agree/agree	56 (65.9)
Strongly disagree/disagree	29 (34.1)
Perceived safety for walking/bike riding	
Extremely safe/quite safe	20 (25.6)
Slightly safe	30 (38.5)
Not at all safe	28 (35.9)
Perception of community as place for physical activity	
Very/somewhat pleasant	52 (65.8)
Not very/not at all pleasant	27 (34.2)
Health-related factors	
Perceived health status	
Excellent/very good	16 (17.6)
Good	38 (41.8)
Fair/poor	37 (40.7)
Body mass index (kg/m ²) [mean $\pm$ SD]	30.1 $\pm$ 2.7
Met PA recommendation ^b	
No	66 (72.5)
Yes	25 (27.5)

^a Frequencies may not sum to $n=91$ due to missing data

^b 150 min of moderate physical activity per week

About three-quarters (70.3 %, $n=64$) of intervention participants activated their YMCA memberships. After activation, however, membership use was very low: 42.2 % ($n=27$) of women had no subsequent visits and 46.9 % ($n=30$) had one to ten visits over the 12-month intervention period. Only seven women (10.9 %) visited the YMCA 11+ times over the 12-month intervention period.

None of the examined psychosocial, contextual, health-related, and sociodemographic predictor variables were associated with activation of the YMCA membership in the bivariate analyses (Table 2). In the bivariate analyses examining frequency of use post-activation (no visits, 1+ visits), only federal poverty level (OR = 5.1, 95 % CI 1.7, 15.3, $p=.004$) and meeting the physical activity recommendations at baseline (OR = 3.9, 95 % CI 1.1, 13.7, $p=.032$) were associated with use of the membership. Individuals living below/borderline the federal poverty line and those who met the physical activity guidelines were more likely to visit the gym after activating their memberships.

Of the 64 intervention participants who reported on their 12-month surveys that they used the YMCA less than twice in a typical week, half ($n=32$, 50 %) cited scheduling or being too busy as reasons they did not use their memberships. Half of these participants ($n=16$, 50 %) specifically mentioned work as a barrier to use. The next most common theme described was inconvenient location of the YMCA ($n=16$, 25 %). Some participants referred to children or childcare issues as a barrier to use ($n=4$, 6 %), and a few women said that they preferred a different exercise method or gym ($n=4$, 6 %). Only three (5 %) participants gave responses indicating a lack of interest in using the membership.

DISCUSSION

Our findings highlight a number of challenges that program planners and policymakers must consider. Our sample of black women, who were overweight and obese, was motivated to enroll in a weight gain prevention study, and many acknowledged that their neighborhoods were inhospitable for physical activity. Many participants activated their free YMCA memberships. Nevertheless, utilization of the free membership was low, although participants were reminded about and encouraged to use their YMCA membership through several sources (skill building materials, health coaches, IVR calls). The strategies that we employed—offering a free YMCA membership and encouraging its use—were not sufficient to promote sustained use; future intervention efforts will likely need to employ more intensive or different intervention efforts to help people join and maintain use of free community-based resources for physical activity.

Although the health coaches encouraged participants to go to the YMCA, it likely would have been beneficial if they had assisted women in identifying

classes that would align with their interests and skill levels. Additionally, more intensive promotion of the YMCA may have increased usage. A study by Balcázar et al. that utilized promotoras to promote use of community nutrition and physical activity resources, including a free YMCA membership, by Mexican American border residents at risk for cardiovascular disease, had higher utilization rates than those found in our study, with participants attending 14 sessions ($SD=21.10$) [38]. The promotoras were situated in the YMCA and were members of the community, which may have increased usage while increasing social support for physical activity. Factors associated with attendance at the YMCA included being older, female, and less acculturated.

It is interesting that individuals participating in our study who were living at/below the federal poverty line were more likely to visit the YMCA after activating their memberships than those whose income placed them above the federal poverty line. It is possible that individuals living at/below the federal poverty level were more motivated to join the YMCA due to limited physical activity opportunities in their neighborhoods, although all Shape participants were patients from a CHC system that served a socioeconomically disadvantaged population. Among participants who joined the YMCA, women meeting the physical activity recommendations at baseline were more likely to return to the YMCA than those who were not meeting the recommendations. This finding suggests that some of the women who were meeting the physical activity recommendation may have had greater motivation, exercise self-efficacy, and/or had established physical activity routines that they preferred over visiting the YMCA. It might have been useful to contact women soon after they activated their memberships to capitalize on this momentum and to address barriers to use. It is noteworthy that use of the YMCA was so limited, especially given that 25 % of participants were meeting the physical activity recommendations at baseline.

Although Waterman et al. [15], drawing from an urban CHC, found that female patients at risk for chronic disease had low rates of membership activation and usage, rates of usage were notably lower in our study. It is conceivable that women in Shape had to travel farther to use facilities given the rural setting, and that distance needed to travel to the YMCAs was a barrier to use. Although nearly all participants owned or had access to a car, access to a vehicle may not be sufficient to enable women with limited incomes living in rural areas to access gym facilities. The associated time with visiting the gym and costs with driving may serve as barriers to use. In addition, unmeasured transportation barriers might have impacted use of the YMCA, and future research could explore this area. For example, car access may have been limited due to shared ownership, or use may be limited to a few hours per week and/or emergencies. Nonetheless, attrition is a common phenomenon among all adults belonging to commercial gyms, as 50 % of adults who begin an

Table 2 | Bivariate analyses examining association between predictor variables and (a) activation of YMCA memberships and (b) frequency of use of YMCA membership among participants in the Shape Program randomized to the Shape intervention ($n = 91$)

	Participant activated membership (yes vs. no) ($n = 91$) OR (95 % CI)	Frequency of use (use vs. no use) ($n = 64$) ^a OR (95 % CI)
Age	1.0 (0.9–1.1)	1.0 (0.9–1.1)
Education		
<High school diploma	Ref	Ref
High school/GED	1.3 (0.3–7.1)	1.5 (0.2–11.5)
Some college or more	1.3 (0.3–5.9)	0.5 (0.1–3)
Employment status		
Employed	Ref	Ref
Unemployed	0.8 (0.3–2.3)	1.3 (0.4–4.3)
Poverty level		
Above	Ref	Ref
Below/borderline	1.5 (0.6–3.7)	5.1 (1.7–15.3)
Children in household		
None	Ref	Ref
1 child or more	1.0 (0.4–2.5)	1.1 (0.4–3.3)
Psychosocial factors		
Self-efficacy for physical activity (PA)	1.0 (0.6–1.7)	1.4 (0.8–2.4)
Perceived weight		
Slightly underweight/about right weight	Ref	Ref
Slightly overweight	1.1 (0.3–4.4)	1.0 (0.2–5.3)
Overweight	1.9 (0.5–7.1)	1.8 (0.4–8.7)
Social support	1.0 (0.96–1.01)	1.0 (0.97–1.02)
Contextual factors		
Own car		
Yes	Ref	Ref
No, but have access to a car	1.7 (0.3–8.7)	0.9 (0.2–3.8)
No	0.2 (0.0–0.9)	0.7 (0.0–12.4)
Places to be physically active		
Strongly agree/agree	Ref	Ref
Strongly disagree/disagree	1.4 (0.5–3.8)	2.3 (0.4–7.3)
Equipment available to be physically active		
Strongly agree/agree	Ref	Ref
Strongly disagree/disagree	1.2 (0.5–3.3)	1.8 (0.6–5.5)
Perceived safety for walking/bike riding		
Extremely or quite safe	Ref	Ref
Slightly safe	0.9 (0.3–2.9)	0.6 (0.2–2.4)
Not at all safe	2.0 (0.5–7.7)	1.2 (0.3–4.5)
Perception of community for PA		
Very/somewhat pleasant	Ref	Ref
Not very/not at all pleasant	2.0 (0.6, 6.1)	1.2 (0.4, 3.4)
Health-related factors		
Perceived health status		
Excellent/very good		Ref
Good	2.2 (0.6–7.4)	0.4 (0.1–2.2)
Fair/poor	2.1 (0.6–7.2)	0.3 (0.1–1.8)
Body mass index (kg/m^2)	1.1 (0.9–1.3)	1.2 (0.97–1.4)
Met PA recommendation ^b		
No	Ref	Ref
Yes	1.5 (0.5–4.2)	3.9 (1.1–13.7)

Bold-faced text is significant at $p < 0.05$

Ref: referent group

^a Analyses are limited to individuals who activated their YMCA memberships^b 150 min of moderate physical activity per week

exercise program drop out within 6 months [39]. Additionally, although not the focus of this study, it is

possible that the skill building materials and health coaching provided as part of the Shape intervention

enabled women to increase their self-efficacy to be physically active at home or in their community and to develop strategies needed to do this. Furthermore, given the multicomponent intervention, it is possible that participants may have viewed some intervention components (i.e., IVR call, coaching calls) as being more essential for weight gain prevention than use of the YMCA.

In retrospect, it may have been beneficial to hold several group orientation sessions for Shape participants at the YMCAs. It is possible that women who never activated their memberships or only went a few times were intimidated or felt uncomfortable going to the YMCA. It would have been useful to ascertain if women had access to other gym or workout facilities and if their use of these facilities as the Shape intervention may have prompted increase usage. Additionally, it would have been beneficial to determine what motivated, facilitated, and sustained use of the YMCA memberships among women who utilized their memberships most often (11+ visits), as this information could inform future interventions. Although the purpose of our study was to examine the use of the community-based resources and not to determine if utilization of resources led to changes in physical activity, an important next step will be to determine if use of community-based resources leads to changes in physical activity.

Shape used an ecological framework for the prevention of weight gain and the promotion of physical activity, with intervention components addressing the individual level by increasing the participants' knowledge about physical activity and self-efficacy to be physically active through behavioral skills training. The interpersonal aspect was addressed through the social support of coaching calls, while the environmental level was addressed by ameliorating financial barriers that may inhibit physical activity by providing a no-cost membership to a facility and supporting childcare if needed.

Although this study has limited generalizability, as participants were socioeconomically disadvantaged black women living in rural areas in the south, women with this demographic profile are at great risk of not meeting physical activity recommendations and for being overweight or obese [40, 41]. This study should be considered in light of study limitations, which include a modest sample size and the possibility that although we collected the number of recorded visits from participating YMCAs, some visits may not have been recorded. Study strengths include a sample that is often underrepresented in research and the assessment of an array of psychosocial, contextual, health-related, and sociodemographic factors.

Conclusion

Many of the black women who were overweight and obese and living in a rural area of the USA who participated in this study were motivated to activate their no-cost annual YMCA memberships, but

subsequent use of the memberships was low. These findings suggest that although women may be motivated to sign up to use community-based resources to promote physical activity, providing access to these resources alone is not sufficient to promote sustained use. More intensive intervention efforts are likely needed to motivate people to use free community-based resources for physical activity. Given limited resources, the results of this present study do not support the idea that simply facilitating access to community-based facilities in rural areas will provide the needed remedy to reduce physical inactivity.

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Compliance with ethical standards The study was approved by the Institutional Review Board at Duke University, and all participants provided signed informed consent.

Ethical statement: All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000.

Conflict of Interest: The authors declare that they have no conflict of interest.

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