Health, Community, and Spirituality: Evaluation of a Multicultural Faith-Based Diabetes Prevention Program

Jaime Gutierrez, Carlos Devia, Linda Weiss, Tongtan Chantarat, Charmaine Ruddock, Jill Linnell, Maxine Golub, Loyce Godfrey, Rosa Rosen and Neil Calman

The Diabetes Educator published online 11 February 2014
DOI: 10.1177/0145721714521872

The online version of this article can be found at:
http://tde.sagepub.com/content/early/2014/02/11/0145721714521872

Published by:
SAGE
http://www.sagepublications.com

On behalf of:
American Association of Diabetes Educators

Additional services and information for The Diabetes Educator can be found at:

Email Alerts: http://tde.sagepub.com/cgi/alerts

Subscriptions: http://tde.sagepub.com/subscriptions

Reprints: http://www.sagepub.com/journalsReprints.nav

Permissions: http://www.sagepub.com/journalsPermissions.nav

>> OnlineFirst Version of Record - Feb 11, 2014

What is This?
Purpose

The purpose of this study was to evaluate Fine, Fit, and Fabulous (FFF), a faith-based diabetes prevention program for black and Latino congregants at churches in low-income New York City neighborhoods. FFF includes nutrition education and fitness activities while incorporating Bible-based teachings that encourage healthy lifestyles.

Methods

FFF is a 12-week, bilingual program developed by the Bronx Health REACH coalition, a Centers for Disease Control and Prevention-funded Center of Excellence for the Elimination of Disparities. This program has been implemented in 15 Bronx and Harlem churches, engaging a primarily black and Latino overweight and obese urban population. Pre–post surveys, nutrition tests, and weight logs were collected to assess knowledge, attitudes, and behaviors regarding healthy eating and physical activity.

Results

Participants (n = 183) reported statistically significant improvements in knowledge and healthy behaviors from baseline. Increased numbers of participants reported exercising in the past 30 days, eating fruit daily, being able to judge portion sizes, and reading food labels. Statistically significant numbers reported exercising in the past 30 days, eating fruit daily, being able to judge portion sizes, and reading food labels.
that they ate less fast food and were less likely to overeat at follow-up. The average weight loss across churches was 4.38 lbs or 2% of participants’ initial body weight. Significant differences were observed when stratifying by race/ethnicity.

Conclusion

Evaluation results show FFF’s success at engaging overweight adults in behavior changes related to healthy eating and exercise. FFF demonstrates the potential of faith-based health interventions to address obesity and diabetes risk in high-need communities of color.

According to the Centers for Disease Control and Prevention (CDC), 25.8 million people in the United States have type 2 diabetes, representing an 8.3 percentage prevalence rate. In 2010, 1.9 million Americans 20 years or older were newly diagnosed, up from 1.6 million diagnosed in 2009. If the current trend in type 2 diabetes incidence continues, it is estimated that 1 in 3 Americans will develop diabetes by 2050, and those with diabetes will lose, on average, 10 to 15 years of life. Type 2 diabetes has a disproportionate effect on minority populations. National survey data from 2011 show that among Americans 20 years or older, significant disparities exist for black and Latino Americans (12.6% and 11.8% prevalence, respectively) compared to white Americans (7.1%). Similar disparities are reported in New York City.

Fortunately, research demonstrates that behavior modification approaches that address diet and physical activity and result in modest weight loss can often prevent type 2 diabetes, since the disease is closely associated with obesity, unhealthy diets, and sedentary lifestyles. Randomized controlled trials have demonstrated that lifestyle modifications addressing diet and physical activity can reduce the risk for type 2 diabetes by 49% to 58% for individuals with pre-diabetes, a higher rate than medication interventions (25%–55%). These successes have encouraged the development, and expansion of, a number of behavior modification diabetes prevention programs in diverse community-based settings, including faith-based institutions.

Latinos and blacks attend church more frequently and become more involved in faith-based services than their white counterparts, suggesting that churches may be an appropriate setting for engaging Latino and black communities in diabetes prevention activities. However, the literature on the effectiveness of faith-based diabetes-related programming is limited, with notable gaps in studies of bilingual/bicultural health programming implemented across multiple faith institutions.

This article seeks to address these gaps in the literature by describing the implementation and outcomes of a faith-based program, Fine, Fit, and Fabulous (FFF), which was developed by the Bronx Health REACH coalition to promote improved nutrition and physical activity and reduced diabetes risk among black and Latino congregants at churches in low-income New York City neighborhoods.

Program Description

Bronx Health REACH (BHR) is a coalition of more than 70 community-based organizations, led by The Institute for Family Health, a federally qualified health center network dedicated to providing primary health services to medically underserved populations. Bronx Health REACH serves the South Bronx and neighboring low-income neighborhoods where almost all of the residents are black or Latino (95%) and suffer disproportionately from a number of preventable diseases. The South Bronx has 1 of the highest rates of diabetes in the country, with approximately 16% of residents diagnosed, compared to 12% Bronx-wide, 9% in New York City, and national rates of less than 8%. It is not surprising that South Bronx residents also experience higher rates of obesity than others in New York: 27% of residents are obese compared to 21% of New York City residents.

In 2001, BHR developed and implemented a Faith-Based Outreach Initiative (FBOI) to reduce racial and ethnic disparities in diabetes and cardiovascular disease. The FBOI includes 47 churches with congregations ranging in size from 25 to 2000, serving primarily black (African American, Caribbean, West African) and Latino congregants. Bronx Health REACH used a Community Based Participatory Research (CBPR) approach to develop and implement the FBOI, which is guided by a Community Research Committee (CRC) composed of pastors, community members, health professionals, REACH staff, and evaluators. Nineteen FBOI churches
are enrolled in the study and committed to program and evaluation requirements, including designation of a health coordinator; attendance at BHR meetings; presentations about health and health equality from the pulpit; implementation of specific BHR programming, including FFF; and participation in the surveys, interviews, and focus groups that are components of the FBOI evaluation. The FBOI is evaluated by The New York Academy of Medicine (NYAM) and all research activities were approved by both the NYAM and The Institute for Family Health Institutional Review Boards. Evaluators meet with the CRC quarterly for quality improvement and monitoring, data analysis, and dissemination purposes.

FFF is a low-cost, 12-week faith-based diabetes prevention program that was developed in 2004 by church members concerned about the health of their congregation. The FFF curriculum uses spiritual messaging and the support of the church community to promote improved nutrition, increased physical activity, and better health using goal-setting techniques. The curriculum includes information on dietary guidelines, portion sizes, healthy cooking techniques, and the relationship between spirituality and health behaviors. Each session includes a 1-hour nutrition discussion followed by a 1-hour exercise session. The FFF curriculum, which was originally created for and piloted in 10 African American, English-speaking churches, was later culturally and linguistically adapted for Latinos in Spanish-speaking churches through partnerships with Hispanic clergy members and diabetes educators from the Bronx.

Methods

Program Implementation

FFF was offered free of charge at participating churches and was open to all. It was facilitated in FBOI churches by 2 consultants (1 fluent in Spanish) from the community with faith orientation and content expertise—1 with a background in nutrition and 1 diabetes educator. The facilitators were members of the CRC and integral to the FBOI. The English-speaking facilitator was among those who first developed the FFF curriculum; the bilingual facilitator was among those who adapted the curriculum for Latinos. The weekly hour-long fitness sessions were conducted by 2 bilingual trainers. At orientation, participants completed a brief medical questionnaire with assistance from the fitness trainers to allow for appropriate design of low-impact cardiovascular exercises for all ages and abilities in each church.

Evaluation Design and Data Collection

The evaluation of FFF includes baseline, 12-week, and 6-month follow-up surveys. Baseline and 12-week surveys were self-administered (with guidance from the FFF facilitator) during the first and last FFF sessions, respectively. Six-month follow-up surveys were administered by telephone by evaluation staff. Survey questions focus on basic demographics, utilization of health care services, church attendance, exercise and dietary habits, neighborhood food environments, and personal motivators to healthy eating. In addition, the FFF facilitator tracks attendance and weight at each session as part of the program. It is important to highlight that facilitators received evaluation training to ensure that the data collected were consistent and comprehensive.

In addition to weight, outcome indicators focused on assessment of knowledge, behavior, attitudes, and health-related quality of life and were selected—with guidance from the CRC—to be consistent with the content of the curriculum. Questions were yes/no, Likert-type scale, or multiple choice, and care was taken to ensure that the wording was easily understood and accessible to the target population. Specific indicators included the following:

- Self-reported knowledge and consumption of healthy foods, unhealthy food (including fast food), and healthy food quantity
- Frequency and duration of physical activity in the prior 30 days
- Attitudes and motivation regarding food consumption and physical activity
- Self-reported changes in energy levels, endurance, general health, and levels of stress

Statistical Analysis

Descriptive statistics (frequency distributions and means, as appropriate) were generated to characterize participants at baseline. Bivariate analyses (chi-square and Student’s t tests) were used to examine differences in characteristics by church population (Latino vs black). Changes from baseline to the end of the program were assessed for categorical variables using McNemar’s test.
and for continuous variables using paired $t$ tests. All analyses were conducted using SAS version 9.2.

**Results**

From winter 2009 to autumn 2012, a total of 15 churches (7 black American, 7 Latino, and 1 West African) in Harlem (3 churches) and South Bronx (12 churches) implemented FFF programs. These churches represent multiple Christian denominations, including Baptist, Pentecostal, Catholic, and non-denominational. Across the 15 churches, 253 individuals participated in FFF. The retention rate across programs was 76% (79% of female participants/63% of male participants). Participants lost to follow-up either did not complete the program ($n = 59$) or did not complete a follow-up survey ($n = 11$). They were excluded from the analysis, leaving a sample of 183 participants who completed 1 full cycle of FFF and for whom baseline and follow-up survey data are available. Participants lost to follow-up were similar to those who completed FFF with respect to race, gender, age, body mass index (BMI), and diabetes disease risk at baseline. Six-month follow-up survey data evaluation for all 15 churches will be reported on at a later date.

**Demographics and Health Status**

As shown in Table 1, most participants were female (88%), between the ages of 45 and 64 (52%), and at high risk for developing diabetes (57%) based on the American Diabetes Association Risk Test,\textsuperscript{10} or with self-reported diabetes (19%). Black participants were more likely to report having diabetes or to be at a higher risk of developing diabetes than their Latino counterparts, which may, in part, reflect their age (44% of black participants were 65 or older, compared to 15% of Latinos). Although the overwhelming majority of participants reported having a regular place for health care (94%), there were significant differences in insurance status among study participants, with only 28% of Latinos reporting having health insurance compared to 80% of black participants (this may also be related, in part, to age). Moreover, Latino participants were more likely to seek health care in community-based (23%) and hospital-based (37%) clinics than black participants (17% and 16%, respectively; data not shown). Most participants had attended their respective churches for more than 5 years (66%) and attend church several times per week (66%). Mean BMI at baseline was 32, with black participants having significantly higher BMIs (mean = 33.4) as compared to Latinos (mean = 29).

**Knowledge and Behavior**

Participants showed improvement in knowledge and in behaviors related to healthy diet and physical activity from baseline to follow-up (see Table 2). Overall, there were statistically significant increases in self-reported knowledge of which foods and drinks are healthier (91%–97%); increased reading of food labels (53%–70%); daily consumption of fruit (56%–75%), vegetables (67%–77%), and water (62%–75%); and decreased consumption of fast food (78%–57%). Compared to participants in Latino churches, there was a greater number of statistically significant improvements among participants in black churches related to the tendency to overeat, skip breakfast, cook with lard and butter, eat fast food, and eat despite not being hungry.

**Health Indicators and Health-Related Quality of Life**

Among participants ($n = 159$) with baseline and follow-up height and weight data, the average weight loss was 4.38 pounds, representing approximately 2% of their initial body weight (see Table 3). Participants from black churches lost more weight than those from Latino churches (2.11% compared to 1.69%, respectively), however, the mean baseline weight at black churches was higher than at Latino churches (201 lbs compared to 172 lbs). Further analysis of weight loss stratified by BMI showed higher weight loss for overweight; BMI=25-29 participants (3.74 lbs compared to 1.59 lbs for those not overweight; - BMI $< 25$). Similarly, obese (BMI $\geq 30$) participants showed slightly higher weight loss than their overweight counterparts (4.16 lbs compared to 3.74 lbs). There were no significant changes reported in health status or mobility (data not shown). However, at the end of the intervention, participants reported better physical endurance (91%), increased energy levels (76%), and a more active lifestyle (78%) data not shown. They also reported noticing a looser fit of clothing (75%), weighing less (76%), an increased sense of self-confidence (79%), feeling less stressed (78%), and a better sense of general health (83%) (data not shown).
Participants were asked about motivators to making healthy lifestyle changes (see Table 4). At baseline, both black and Latino participants were most motivated by health and wanting to feel better (94% and 99%, respectively). A higher proportion of Latino participants were also motivated by religious or spiritual beliefs about healthy living (92% of Latinos compared to 84% of...
blacks). Lack of motivation or will power was identified by both populations as the greatest obstacle to behavior change (27% for both groups). Black respondents were more likely to report “access to exercise facilities” as an obstacle (18%), whereas Latinos were more likely to report “support from partners, family members, and friends” (17%).

### Discussion

FFF shows promising results that are consistent with program objectives. Overweight and obese participants lost an average of 4 pounds in 12 weeks, approximately 2% of their body weight. There was also an increase in self-reported knowledge and healthy behaviors. Similar
levels of success have been reported for other health promotion programs implemented in black churches,\textsuperscript{11–13} however, few have successfully expanded into Latino churches.\textsuperscript{14} Greater statistical changes in dietary behaviors (ie, the tendency to overeat, skip breakfast, and eat fast food) and weight loss occurred in black churches. These results may reflect a greater sample size in black churches, a poorer baseline for many of the behaviors, and FFF facilitators’ teaching styles. However, FFF also showed positive outcomes for Latinos in weight loss and in knowledge and behaviors related to diabetes prevention, suggesting that it may be an appropriate model across populations. Results in the study also showed some differences between groups regarding the obstacles and motivators for behavior change. Although the biggest motivator for both groups was “wanted to feel better” and the biggest obstacle was “lack of will power,” Latinos also reported “religious beliefs” as a motivator and “lack

| Table 3 |
| Participant Weight at Baseline and 12 Weeks |

<table>
<thead>
<tr>
<th></th>
<th>All Participants (n = 159)&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Black (n = 107)</th>
<th>Latino (n = 76)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>12 Weeks</td>
<td>Baseline</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>Mean Weight, lb</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Body Mass Index</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>% Weight Loss, lb</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>159</td>
<td>189.21</td>
<td>31.98</td>
</tr>
<tr>
<td>Body mass index</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 30</td>
<td>90</td>
<td>218.19</td>
<td>36.48</td>
</tr>
<tr>
<td>25–29</td>
<td>52</td>
<td>159.42</td>
<td>27.35</td>
</tr>
<tr>
<td>&lt; 25</td>
<td>17</td>
<td>126.94</td>
<td>22.36</td>
</tr>
</tbody>
</table>

<sup>a</sup>n < 183 because of missing weight values at baseline or follow-up.

<sup>b</sup>P < .05 in paired t test for changes in weight from baseline.

| Table 4 |
| Baseline Motivators and Obstacles to Behavior Change |

<table>
<thead>
<tr>
<th></th>
<th>All (N = 183)</th>
<th>Black (n = 107)</th>
<th>Latino (n = 76)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
</tr>
<tr>
<td>Motivators</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religious or spiritual beliefs about healthy living</td>
<td>143 87.2</td>
<td>82 83.7</td>
<td>61 92.4</td>
</tr>
<tr>
<td>Wanting to look better</td>
<td>135 82.8</td>
<td>84 85.7</td>
<td>51 78.5</td>
</tr>
<tr>
<td>Health—wanting to feel better</td>
<td>161 95.8</td>
<td>96 94.1</td>
<td>65 98.5</td>
</tr>
<tr>
<td>Pressure from others</td>
<td>34 21.7</td>
<td>20 21.5</td>
<td>14 21.9</td>
</tr>
<tr>
<td>Support from the community at my church</td>
<td>112 69.1</td>
<td>59 62.8</td>
<td>53 77.9</td>
</tr>
<tr>
<td>Obstacles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of motivation or will power</td>
<td>50 27.3</td>
<td>29 27.1</td>
<td>21 27.4</td>
</tr>
<tr>
<td>Access to exercise facilities</td>
<td>29 15.8</td>
<td>19 17.8</td>
<td>10 13.2</td>
</tr>
<tr>
<td>Access to healthy food</td>
<td>23 12.6</td>
<td>12 11.2</td>
<td>11 14.5</td>
</tr>
<tr>
<td>Support from partners, family members, and friends</td>
<td>21 11.5</td>
<td>8 7.5</td>
<td>13 17.1</td>
</tr>
</tbody>
</table>
of support from partners, family, and friends” as an obstacle to meeting their health goals. In contrast, participants in black churches reported “wanting to look better” and “access to exercise facilities” as factors influencing behavior change. Future research may be needed to better understand how to best tailor diabetes prevention activities for both groups.

There was a number of limitations to the research. Although data were drawn from FFF programs in 15 FBOI churches, they were primarily in the Bronx and may not be typical of churches elsewhere. In addition, FFF was embedded in a larger initiative focused on health promotion in participating churches. This larger initiative, which facilitated the development of well-defined health ministries, health-related messaging from the pulpit, as well as other organizational changes, may have influenced the success of participants in the FBOI churches. In addition, all data other than weight and attendance were self-reported, introducing the potential for reporting bias. Guided by the CRC, program planners (BHR staff) and evaluators (NYAM staff)—with limited resources—prioritized implementing FFF programs rather than developing control groups, which makes it impossible to identify changes that would have occurred in the absence of an intervention. In addition, as a community-based evaluation (rather than a rigorous scientific study), brief and simple instruments were used. Staff also experienced difficulties tracking participants, and some inconsistencies in survey completion were noted. To ameliorate some of these challenges, BHR and NYAM staff offered to program facilitators ongoing training and technical assistance regarding appropriate procedures for data collection, as well as the implications of errors and missing data. Despite these limitations, this article adds to the literature on faith-based programs due to the number and diversity of churches involved as well as the diversity of outcomes assessed.

Implications

Given the scale of the obesity and diabetes epidemics, and the diversity in the populations affected, a variety of interventions representing a range of models is needed. Although it may not be appropriate for all, among individuals with a strong sense of faith, church-based programming, infused with spiritual messages, represents a promising approach. Facilitating health interventions in places of worship offers a number of advantages to engage populations that may be less likely to attend programs offered at traditional health institutions. Faith-based programs make engagement easy, as significant numbers of potential participants regularly attend church, have trust in, and feel accountable to, church leadership. Faith-based settings also provide multiple opportunities to reinforce program recommendations through health messaging in sermons and signage as well as changes to organizational food policies. FFF is a program that infuses religious teachings and spirituality into the curriculum to provide motivation, inspiration, and comfort to participants and to facilitate continued engagement and positive behavior change. As described elsewhere in the literature, FFF is also a low-cost intervention that can be easily replicated in other faith settings. Assuming the availability of a volunteer coordinator and free space, church costs to run FFF are limited to the cost of printing curriculum guides (see www.bronxhealthreach.org for the program toolkit), hiring a fitness instructor, and purchasing a scale. Based on a program of 20 individuals, this averages to $60 per participant for the entire 12-week program (or $5 per class).

In sum, this study makes a contribution to the literature describing promising practices to address obesity and, potentially, to reduce the onset of type 2 diabetes. FFF was implemented in multiple churches with diverse (African American, African, and Latino) participants. Baseline and follow-up data suggest positive outcomes for a sizable number of participants. Staff continues to collect survey and interview data to better assess program effectiveness and to document processes for implementation that might be used for wide-scale replication in other communities.

References

5. Kaplan SA, Calman NS, Golub M, Billings J. The role of faith-based institutions in addressing health disparities: a case study of
Multicultural Faith-Based Diabetes Prevention Program


For reprints and permission queries, please visit SAGE’s Web site at http://www.sagepub.com/journalsPermissions.nav.