Evaluation and Program Planning 43 (2014) 93–102

Contents lists available at ScienceDirect

Evaluation and Program Planning

journal homepage: www.elsevier.com/locate/evalprogplan

Process evaluation methods, implementation fidelity results and relationship to physical activity and healthy eating in the Faith, Activity, and Nutrition (FAN) study

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ARTICLE INFO

Article history:
Received 17 June 2013
Received in revised form 26 November 2013
Accepted 27 November 2013

Keywords:
Process evaluation
Implementation
Mediation analysis
Faith-based setting

ABSTRACT

Faith, Activity and Nutrition (FAN), a community-based participatory research project in African American churches, aimed to increase congregant physical activity and healthy eating. The Health-Promoting Church framework, developed collaboratively with faith-based partners, guided the intervention and a comprehensive process evaluation. The Health-Promoting Church components related to healthy eating and physical activity were getting the message out, opportunities, pastor support, and organizational policy. There was no evidence for sequential mediation for any of the healthy eating components. These results illustrate the complexity of systems change within organizational settings and the importance of conducting process evaluation. The FAN intervention resulted in increased implementation for all physical activity and most healthy eating components. Mediation analyses revealed no direct association between implementation and increased physical activity; rather, sequential mediation analysis showed that implementation of physical activity messages was associated with improved self-efficacy at the church level, which was associated with increased physical activity.

1. Introduction

The Faith, Activity, and Nutrition (FAN) program was a participatory research intervention that aimed to increase physical activity and improve dietary practices in African American churches (Wilcox et al., 2010). Participants in intervention compared to control churches showed modest but significantly larger increases in self-reported leisure-time physical activity and fruit and vegetable consumption in a group randomized trial (Wilcox et al., 2013). Unique elements of FAN included a community-based participatory research (CBPR) approach in a faith-based setting with extensive stakeholder involvement from prefunding through the dissemination phases of the project; a flexible and adaptive intervention that emphasized integrating healthful eating and physical activity into organizational (church) routines; and a public health focus on changing the church physical and social environment to achieve population behavior change (Wilcox et al., 2010, 2013). Given the complexity of the setting and intervention approach, a comprehensive approach to process evaluation was an integral part of the FAN project. A potentially important, but underused, application of process data is to examine the effects of intervention implementation on primary study outcomes (Baranowski & Stables, 2000; Linnan & Steckler, 2000).

The FAN intervention, described previously (Wilcox et al., 2010), entailed working in partnership with church pastors, FAN committees, and cooks, who were provided training and on-going technical assistance to increase their capacity to assess the church environment and to develop and carry out a plan to promote physical activity and healthful diet based on the Health-Promoting Church framework. Thus, the FAN intervention can be characterized as a standardized process (Hawe, Shiell, & Riley, 2004; Hawe, Shiell, & Riley, 2009) that allowed variation in implementation details from church to church to accommodate specific, local contexts. This type of flexibility is an important consideration when addressing physical, organizational, and social change (Poland, Krupa, & McCall, 2009) and is also associated with sustained change (Scheirer, 2005). Accordingly the FAN intervention may be characterized as both complex (Chen, 2005; Cohen, Scribner, & Farley, 2000; Foster-Fishman, Nowell, & Yang, 2007;

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http://dx.doi.org/10.1016/j.evalprogplan.2013.11.003

Hawe et al., 2004) and structural, targeting change in factors beyond the control of individuals in the setting (Blankenship, Friedman, Dworkin, & Mantell, 2006; Cohen et al., 2000; Matson-Koffman, Brownstein, Neiner, & Greaney, 2005). Consistent with the CBPR approach, church leaders and members were involved in the planning and implementation process for environmental change within the church organization. Facilitating setting-appropriate structural change through a participatory approach has potential for sustainable, population impact in faith-based settings.

2. Background

Complex structural interventions require extensive stakeholder involvement, longer time frames, and are subject to strong contextual influences (Chen, 2005; Shadish, Cook, & Campbell, 2002). Therefore, they pose evaluation design and execution challenges which necessitate a comprehensive approach to program evaluation and implementation monitoring (Durlak & DuPre, 2008; Medical Research Council, 2008). Previous reports have described implementation monitoring for complex structural interventions in organizational settings including LEAP in schools (Saunders, Ward, Felton, Dowda, & Pate, 2006; Saunders et al., 2012) and ENRICH in children's group homes (Saunders et al., 2013). This report applies this approach to a CBPR intervention to promote physical activity and healthy eating in churches, which have some unique features.

A recent review of process evaluation in faith-based settings revealed that few report a comprehensive approach to process evaluation (Yeary, Klos, & Linnan, 2012). An average of about three of seven possible process evaluation components were reported, most commonly recruitment (88%) and reach (81%), followed by context (34%), dose delivered (28%), and dose received (27%); less frequently reported were implementation (21%) and fidelity (9%) (Yeary et al., 2012). The FAN process evaluation was comprehensive and included dose-delivered or completeness, dose-received, reach, fidelity, context, and recruitment. Because FAN was a structural intervention with an emphasis on changing the environment with the presumption that congregants within that environment would be "exposed" to the intervention (versus an emphasis on exposing individuals to intervention components), the process evaluation components are defined differently in FAN. Reach was defined at the organizational level (i.e., church team and leader participation in training). Similarly, implementation fidelity was defined as the extent to which the church committees (serving as organizational change agents) made changes in the church environment (Wilcox et al., 2010), as reported by congregant and key informant perceptions of environmental change. The purposes of this paper are to present the FAN process evaluation methods and implementation fidelity results (Study 1), and to examine the relationship between implementation and study outcomes (Studies 2 and 3).

3. Study I: implementation monitoring

3.1. Implementation monitoring planning

The processes of planning the FAN intervention and process evaluation were based on guidelines for developing a program implementation monitoring plan (Saunders, Evans, & Joshi, 2005) and methods for assessing organizational level implementation (Saunders et al., 2006, 2012, 2013), derived from the frameworks presented by Linnan and Steckler (2000) and Baranowski and Stables (2000). The steps for designing and carrying out process evaluation applied to this study are: describing the setting, context, and program; describing "fidelity and dose" for the program; developing implementation monitoring methods to address process evaluation questions; examining the mean implementation for each intervention component; and using implementation data to understand outcomes (including the use of mediation analyses, which allows researchers to understand *how* an intervention exerts its effects on program outcomes).

3.1.1. Describe the setting, context, and implementation approach

FAN was a CBPR project, initiated and carried out by a multi-organizational partnership consisting of the University of South Carolina, the African Methodist Episcopal (AME) church, the Medical University of South Carolina, Clemson University and Allen University, as previously reported (Wilcox et al., 2010). During the first year of the project, a planning committee that included church leaders, lay church members, and university faculty and staff met monthly to plan the intervention and evaluation and met quarterly to oversee study activities in subsequent years. As described in detail elsewhere (Wilcox et al., 2010, 2013), 128 churches from four AME districts in South Carolina were invited to participate in this group randomized trial and 74 of these enrolled. Churches were located in both rural and more populated areas, and 26 were considered small in size (<100 members), 44 medium (100–500 members), and 12 large (>500 members). Churches were randomized to receive the intervention shortly after baseline measurements were taken (early churches, $n = 38$) or after a 15-month delay (delayed churches, $n = 36$). Delayed churches thus served as the control group for early churches. However, not all churches were included in this study because some churches did not have complete pre/post data on any participants. This study included 68 churches with participant data (37 intervention, 31 control).

3.1.2. Describe the program

The 15-month FAN program consisted of a full-day committee training, a full-day cook training, monthly mailings to churches with information and materials to help support implementation, and technical assistance calls. Each church formed a FAN committee and attended a training that focused on assessing current church activities to promote physical activity and healthy eating and then ways to add, enhance, or expand them. The FAN committee thus served as organizational change agents (Commers, Gottlieb, & Kok, 2007). Churches were asked to implement physical activity and healthy eating activities that targeted each of the four structural factors within the structural ecologic model (Cohen et al., 2000): availability and accessibility, physical structures, social structures, and cultural and media messages. Each church developed a formal plan and budget and received a stipend upon plan approval (up to $1000 depending on church size) to assist them with program implementation. A separate training was held for church cooks or those involved in meal planning at the church (Condrasky, Baruth, Wilcox, Carter & Jordan, 2013). This training focused on the Dietary Approaches to Stop Hypertension (DASH) (Sacks et al., 1999) diet plan. The training was participatory and helped churches to modify current recipes and offer options that were healthier.

Each church received a monthly mailing that included information about physical activity and healthy eating, health behavior change strategies, incentives, handouts supporting FAN goals (e.g., bulletin inserts), and tools for cooks (e.g., recipes). Pastors received motivational information and an activity to try. Finally, follow-up technical assistance calls were made to pastors, FAN coordinators, and cooks on a rotating basis. The calls focused on program implementation and problem-solving to overcome challenges.

3.1.3. Describe desired "fidelity and dose" for the program

Complete and acceptable delivery for FAN was based on the characteristics of the Health-Promoting Church. The framework for