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Developing self-management education in coronary artery disease

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ABSTRACT

We describe a three-step approach to develop and evaluate a novel coronary artery disease (CAD) self-management educational workbook. First, we conducted interviews using grounded theory methods with a diverse CAD cohort ($n = 61$) to identify needs and perceptions. Second, we developed the workbook, incorporating themes that emerged from the qualitative interviews. Finally, 225 people with CAD used the workbook in a longitudinal study and we evaluated their use of and experience with the workbook at 12 months. 12-month evaluation data revealed that the workbook: provided practical health information; enhanced behavior-specific self-efficacy; and reinforced that healthy behaviors decrease risk. Participants who read the workbook had greater within-patient increases in physical activity at 12-months compared with non-readers ($p = 0.093$) and among Black/Hispanic participants, workbook readers' increases were significant (592 vs. −645 kilocalories per week, $p = 0.035$). A self-management educational workbook developed using qualitative methods can provide relevant, disease-specific health information for patients with CAD.

Introduction

Behavioral risk reduction in coronary artery disease (CAD) plays an important role in mediating health outcomes following coronary angioplasty.[1] However, many people with CAD lack critical knowledge about the role that behaviors (e.g., physical activity) can play in secondary prevention.[2] Further, people with CAD may underestimate the risk of disease progression if unhealthy lifestyle behaviors persist after sustaining an event such as coronary angioplasty.[3–5] For example, those with CAD who engage in physical activity can achieve significant and growing reductions in mortality and cardiovascular risk with maintenance of activity; a number of meta-analyses have established that people with CAD who adhere to exercise-based cardiac rehabilitation have lower overall mortality (13%,[6] 20%[7] and 26–47%[8–10]) and decreased cardiac mortality (26%,[6] 26%[7] and 30%[8–10]) at 12, 15 and 24 months, respectively. Despite these impressive reductions in outcomes, most people with CAD do not engage in sustained physical activity or other health behaviors consistently over time and rates of non-adherence are high.[11,12] According to data from NHANES (2009–2010), among those with cardiovascular disease (CVD), almost two-thirds engage in no physical activity.[13] Studies demonstrate that among people who have been hospitalized for CAD, physical activity levels increase initially following discharge and then begin to decline at about 2–4 months post-discharge.[12,14] Among people who participate in exercise-based cardiac rehabilitation programs, all age groups experience a downward trend in exercise over time and only 22% of people are adherent to guidelines after 12 months.[11] Therefore, new approaches are needed to

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both educate those with CAD and at risk for CAD about health behaviors, such as physical activity, as well as motivate sustained healthy behaviors over time.

Most people with CAD lack knowledge about the role that health behavior, such as physical activity, can play in decreasing risk of recurrent cardiac events.[2,4] Health education is a critical component of behavior change, but general health education alone has been shown to be inadequate to motivate physical activity in older adults.[15] Enhancing self-efficacy,[16,17] self-monitoring,[16,18] and goal-setting[18,19] are examples of proven approaches in the management of CAD risk factors and combinations of such approaches are recommended to promote behavior change.[15,20,21] Some of the strongest evidence in promoting health behaviors supports the application of self-efficacy theory.[22]

Self-efficacy, a person's confidence to perform a specific behavior,[23] is a mediator of self-management activities and health outcomes and predicts both initiation and maintenance of health behaviors.[24,25] In women with CAD, self-efficacy has been shown to predict self-management behaviors including medication adherence, physical activity, stress management and diet.[26] Our overarching goal was to enhance CAD participants' behavioral self-efficacy, i.e., in this context, their confidence to engage in cardiovascular disease self-management strategies, such as increasing physical activity. We applied the following constructs from Social Cognitive Theory: 1) Self-efficacy enhancement; 2) Behavioral Contracting; 3) Self-monitoring; 4) Outcome Expectations; and 5) Observational Learning/Modeling.[23,27]

In applying Social Cognitive Theory to ethnically diverse groups, Bandura asserts that the fundamental determinants of behavior operate similarly in all populations and that the theoretical approach can be adapted across demographic, racial and ethnic groups. Whether the society is primarily individualistic or communally-focused, a high perceived efficacy promotes both high effort and performance attainments.[28,29] In order to reach the increasingly diverse population in the United States, researchers and educators have recognized the need for and benefits of delivering care and health education that is tailored to address cultural attitudes and beliefs.[30–33] The current standard is to develop separate, disease-specific educational materials for different racial, ethnic or cultural groups; in one study the investigators created 12 versions of an educational guide.[34] We sought to create a self-management educational workbook that would be cross-cultural, that is, relevant and understood by our diverse population of people with CAD in New York City. Previously, cross-cultural and transcultural approaches have been applied to educating[35] and providing resources[36] to healthcare practitioners; this approach has not, to our knowledge, been applied to patient education.

This paper describes the process and methods used to create self-management education for people with CAD designed to address the needs of a racially/ethnically diverse group, all of whom had recently undergone coronary angioplasty. Our approach involved three steps: 1) conducting qualitative interviews to identify needs and perceptions of disease in a cohort with CAD; 2) developing the self-management workbook employing Social Cognitive Theory and incorporating patient-generated themes that emerged from the qualitative interviews; and 3) implementing the workbook as a tool within a larger behavioral intervention study and evaluating patients' use and experience with the workbook at the end of 12 months.

Qualitative study

The goal of the qualitative study was to assess the needs, perceptions, knowledge, attitudes and beliefs of the population, and to gain a sense of our population's understanding of CAD self-management. The Institutional Review Board approved the study and all participants provided informed written consent. We interviewed 61 post-angioplasty patients 3 years after enrollment in a previous behavioral study. We used purposive sampling to make certain that half of our sample had been *successful* in behavior change and that half had been *unsuccessful* in behavior change.[4] In this manner, we believed we would obtain a broad continuum of information about the barriers to and facilitators of behavior changes. In addition, we employed maximum variation sampling[37] to ensure oversampling of minority participants (33% Black, 33% Hispanic and 34% Caucasian) and women (48%) (Table 1). The methods and results of the qualitative study have been previously reported.[4,30]

The interview data generated four main themes (see Table 2).[4] In particular, theme 4 highlighted that knowledge deficits were common and that many people had misperceptions regarding the relationship between health behaviors and cardiovascular risk reduction. Participants undervalued health behaviors in secondary prevention, felt a lack of control over their health, and tended to minimize the seriousness of coronary angioplasty.

Developing the self-management workbook

Our overarching goal was to enhance self-efficacy, and thus we developed a workbook that addressed components of Social Cognitive Theory. Strategies to increase self-efficacy included incremental goal setting, behavioral contracting and self-monitoring.

Behavioral contracting

In addition to providing concrete strategies for increasing physical activity, we included a behavioral contract, whereby participants were encouraged to set their own reasonable goals for behavioral change.[38] The contract included four components: Do what? When? How often? How much?[38]

Self-monitoring

We encouraged participants to keep track of their progress and provided space within the workbook to record their goals. We included a table for participants to track incremental progress, to facilitate regular review and adjustment of the behavioral goal.

Table 1
Demographic and clinical characteristics for the qualitative and evaluation cohorts used in development of the self-management workbook.

Characteristics, *n* (%)	Qualitative cohort ($n = 61$)	Evaluation cohort ($n = 225$)	*p*-value
Age (mean $y \pm$ SD)	63.8 ± 9.1	63.0 ± 11.0	0.60
Female	29 (48.0)	66 (29.3)	0.0074
Caucasian	21 (34.4)	183 (81.3)	<0.0002
African–American	20 (32.8)	23 (10.2)	<0.0002
Other race (mixed or Asian)	0 (0.0)	19 (8.4)	0.019
Hispanic ethnicity	20 (32.8)	26 (11.6)	<0.0002
Completed high school or greater	44 (72.0)	209 (92.9)	<0.0002
Working full or part time	23 (37.7)	129 (57.3)	0.0064
Married	30 (49.2)	159 (70.7)	0.0017
Body mass index (BMI) (mean kg/m^2 ± SD)	29.3 ± 5.7	29.0 ± 5.8	0.72
Overweight (BMI 25.0–29.9)	28 (45.9)	90 (40)	0.41
Obese (BMI >30.0)	21 (34.4)	82 (36.4)	0.77
Previous PCTA	24 (39.0)	82 (36.4)	0.68
Previous CABG	11 (18.0)	31 (13.8)	0.40
MI	22 (36.0)	65 (28.9)	0.28
Stroke	5 (8.2)	12 (5.3)	0.40
Diabetes mellitus	21 (34.4)	58 (25.8)	0.18
Former smoker	31 (50.8)	152 (67.6)	0.016
Current smoker	10 (16.4)	20 (8.9)	0.090

Adapted from Refs.[4,23]