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Process evaluation of an exercise counseling intervention using motivational interviewing

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ABSTRACT

Aim: To describe the results of the process evaluation of an exercise counseling intervention using motivational interviewing (MI).
Background: Exercise can safely be incorporated into heart failure self-care, but many lack access to cardiac rehabilitation. One alternative is to provide exercise counseling in the clinical setting.
Methods: This process evaluation was conducted according to previously established guidelines for health promotion programs. This includes an assessment of recruitment and retention, implementation, and reach.
Results: Desired number of subjects were recruited, but 25% dropped out during study. Good fidelity to the intervention was achieved; the use of MI was evaluated with improvement in adherence over time. Dose included initial session plus 12 weekly phone calls. Subjects varied in participation of daily diary usage. Setting was conducive to recruitment and data collection.
Conclusions: Evaluating the process of an intervention provides valuable feedback on content, delivery and fidelity.

1. Introduction

Heart failure (HF) affects over five million adults in the United States (Go et al., 2014) and exercise intolerance is a primary symptom (Pina et al., 2003). Exercise can safely be included in the self-care regimen for patients with stable HF and improve their clinical status (Hunt, 2005). Given the many barriers to attending a formal structured exercise program like cardiac rehabilitation, including referral and cost (Shanmugasegaram, Oh, Reid, McCumber, & Grace, 2013), it has been challenging for clinicians to assist patients in achieving recommended exercise goals. One option to improve exercise habits may be for clinicians to provide routine exercise counseling during medical appointments. In fact, one of the goals of Healthy People 2020 is to increase the proportion of medical office visits that include counseling or education about exercise with patients diagnosed with heart disease, diabetes or hyperlipidemia (Centers for Disease Control and Prevention (CDC), 2013). Thus, a pilot study of an exercise counseling intervention attempted to fill that gap (McCarthy, Dickson, Katz, & Chyun, 2013).

Traditionally, most of the focus of an intervention study is on the outcome measures, examining efficacy, which is how well the intervention performs under ideal conditions (Singal, Higgins, & Waljee, 2014). But an important aspect of nursing intervention research is to clearly define the content and process of implementation so the intervention and results can be more fully evaluated. Unfortunately, these types of data are not often available from nursing interventions (Whittemore & Grey, 2002). A process evaluation documents how a program or intervention is executed and helps our understanding of the relationship between the elements of a program or intervention and its outcomes (Saunders, Evans, & Joshi, 2005). Process evaluations can lead to a rich description of a program's organization, procedures, personnel, and target audience (Devaney & Rossi, 1997) that guides future intervention development and evaluation. Therefore, the purpose of this paper is to describe the results of the process evaluation of an exercise counseling intervention using motivational interviewing (MI) in an ethnic minority sample with HF. Specifically, this paper will describe the intervention, and the following aspects of a process evaluation: 1) the recruitment and retention; 2) the implementation of the intervention according to protocol, which includes fidelity, dose, and context; and 3) reach of the intervention to the targeted population.

Author contributions:
Study concept and design: Drs. McCarthy, Dickson, Katz, Chyun.*Recruitment of patients, acquisition of data*: Dr. McCarthy.*Analysis and interpretation of data*: Drs. McCarthy, Chyun.*Drafting of the manuscript:* Dr. McCarthy.*Critical revision of the manuscript for important intellectual content*: Drs. McCarthy, Dickson, Katz, Chyun, Ms. Sciacca.

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2. Methods

This paper reports on the process evaluation of a pilot study (McCarthy et al., 2013) of an exercise counseling intervention for adults with HF (n = 20). This intervention consisted of three parts: an initial exercise counseling session; 12 weeks of telephone follow-up; and participation in a daily diary for self-monitoring. For this pilot study (a pretest-posttest design), ethnic minority adults (age ≥18) with stable HF who met inclusion criteria (stable New York Heart Association class I, II or III; age 18–65 years; diagnosed with systolic HF (EF <40%) for at least 3 months (Cameron, Worrall-Carter, Page, & Stewart, 2010); able to perform exercise; English speaking; and cleared by HF provider to participate) were invited to participate. A Mini Mental Status Exam (Folstein, Folstein, & McHugh, 1975) score of ≥24 was required to participate. Exclusion criteria, chosen to assure participants were medically stable and safe to exercise were: cardiac event within previous three months; severe psychiatric disorders and cognitive impairment; pulmonary disease, unstable arrhythmias or valvular disease; planned surgery in next three months; and inability to exercise. Current participant in structured exercise program was also an exclusion.

Recruitment and data collection for the pilot study took place in a HF clinic within a large urban hospital. The appropriate institutional and clinical IRB approvals were obtained and all participants provided written informed consent before participation. Research data were collected at time of enrollment and 12 weeks later after completion of the initial exercise counseling intervention using established measures of physical activity, functional status, mood, quality of life, self-care, and vascular function.

The process evaluation of the pilot study was based on previously defined guidelines for health promotion programs using mixed methods (Saunders et al., 2005). This included the data collection and analysis of the recruitment and retention, implementation (fidelity, dose, context), and reach to the target population. Table 1 lists the components of the process evaluation, method of evaluation, and results.

2.1. Data collection and analysis

2.1.1. Recruitment and retention

An evaluation of the procedures used to approach participants, and maintain them in the study, including the number of individuals screened and excluded, the number enrolled, and the number lost to follow-up.

2.1.2. Implementation

Implementation was evaluated by examining fidelity to the intervention, the dose, the context of intervention delivery, and adverse events. Evaluation of the fidelity to the intervention (how closely it was implemented as designed) focused primarily on the incorporation of MI principles into the counseling sessions. All 20 exercise counseling sessions conducted at the beginning of the study were audiotaped. During the recruitment phase, four audiotapes (20%) were sent to an independent expert in MI for review and assessment of the interventionist's use of MI. Specifically, each tape was scored for adherence to the principles of MI. Summary scores for each of the four audiotapes included five categories: (1) average of spirit global (use of evocation, collaboration, autonomy/support, direction, and empathy); (2) reflection to question ratio; (3) percent open questions; (4) percent complex reflections; and (5) percent MI-adherent (Moyers, Martin, Manuel, Miller, & Ernst, 2010). The independent expert in MI scored each session.

Evaluation of the dose of the intervention that was delivered consisted of examining the quantity or amount of intervention delivered to participants. This consisted of three components: the exercise counseling session, telephone follow-up, and use of the daily diary. Participation in each component was calculated. Engagement with the daily dairy was tallied for each of four activities: daily step-counts, body weight, use of the hand weights, and the Borg scale. The total number of actual recorded data for each activity was divided by the number of potential diary recordings (15 participants × 84 days = 1260). This resulted in the percent adherence in each activity. The context of intervention delivery was evaluated by exploring aspects of the environment that could influence the intervention or intervention delivery. This included the physical and social aspects of the environment and the situational issues that could affect delivery of the intervention or its outcomes. Lastly, any adverse events experienced by participants were recorded.

2.1.3. Reach

This assessed the percent of the target population screened that was able to participate, the ability to recruit the desired sample from the target population, and included documenting barriers to participation.

Process data on the implementation of an intervention can be both formative (feedback that helps to keep the program on track) and summative (data on how well the program was implemented)(Saunders et al., 2005). Elements of this process evaluation were established a priori and were evaluated in a summative fashion upon completion of the study. However, the use of MI in the exercise counseling intervention was evaluated during the study period to allow for formative evaluation.

2.2. Description of the exercise counseling intervention

The exercise counseling intervention involved brief face-to-face exercise counseling followed by 12 weeks of weekly telephone follow-up and the use of a daily diary for self-monitoring. The principles of MI were incorporated into both the initial exercise counseling session and the telephone follow-up. MI is an evidenced-based approach to assist individuals with behavior change. Miller and Rollnick (2002) identify three components that are essential to the spirit of MI. The first is the collaborative nature of the relationship between counselor and client. The second is the process of evocation, of eliciting or drawing out the client's intrinsic motivation. Lastly, there is respect for the client's autonomy; the client is responsible for the behavior change. Research supports that brief interventions using MI can lead to significant change (W. R. Miller & Rollnick, 2002). Although MI was initially used in the field of addiction, it has been used to promote different types of behavioral change, including physical activity (Cushing, Jensen, Miller, & Leffingwell, 2014).

During the initial counseling session, past exercise experience, future goals, and safety tips on exercising with HF were discussed. For example, participants were asked if they had ever exercised before, and what they might like to be able to do now. They were also asked, "Tell me what you know about exercising safely", which was then supplemented with a one-page sheet on safe exercising tips. At this initial session, participants were instructed on use of the Borg scale of perceived exertion (Borg, 1990) and were counseled to exercise at a moderate effort level. Participants were given an accelerometer to keep track of step-counts, 2-pound hand weights with instructions for upper body exercises, and a diary to record the four self-care activities. This initial counseling session was audiotaped to assess fidelity to the intervention and use of MI.

Participants were contacted weekly by telephone. The calls included a review of symptom management if needed, and barriers to exercise (exercising in the heat for example). Participants were encouraged to keep track of symptoms (like shortness of breath or fatigue) and how they responded to them. Strategies for increasing activity were also discussed. An increased step-count goal for the next week was provided if the participant was willing. The telephone calls followed the same script each week, reflecting the process of MI. The principles of MI, including the components of collaboration, evocations and autonomy discussed earlier, continued during the telephone contact. For example, this included engaging the subject ("Tell me how things are going"), collaborative agenda setting (How do you feel about increasing your steps for next week?), evoking change talk ("Tell me how you feel about the walking you're doing") and summarizing the discussion ("So this week you accomplished your step goal without having any symptoms and you'll aim to increase your steps by 600 steps per day next week. Anything else?").