

## Original Research Reports

# Positive Psychology Interventions for Patients With Heart Disease: A Preliminary Randomized Trial



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**Background:** Positive psychologic characteristics have been linked to superior cardiac outcomes. **Objective:** Accordingly, in this exploratory study, we assessed positive psychology interventions in patients who had recently undergone a procedure to treat cardiovascular disease. **Method:** Participants were randomly assigned to receive 1 of 3 different 6-week face-to-face interventions or a wait-list control condition. We assessed intervention feasibility and compared changes in psychologic outcome measures postintervention (7 wk) and at follow-up (15 wk) between intervention and control participants. Across the interventions, 74% of assigned sessions were

completed. **Results:** When comparing outcomes between interventions and control participants ( $N = 55$  total), there were no between-group differences post-intervention, but at follow-up intervention participants had greater improvements in happiness ( $\beta = 14.43$ , 95% CI: 8.66–20.2,  $p < 0.001$ ), depression ( $\beta = -3.87$ , 95% CI:  $-7.72$  to 0.02,  $p = 0.049$ ), and hope ( $\beta = 7.12$ , 95% CI: 1.25–13.00,  $p = 0.017$ ), with moderate-large effect sizes. Efficacy of the 3 interventions was similar. **Conclusions:** Future studies are needed to identify an optimal positive psychology intervention for cardiac patients.

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**Key words:** positive psychology, optimism, depression, heart disease, coronary artery disease, coronary artery bypass graft.

## INTRODUCTION

Coronary artery disease is the leading cause of death worldwide,<sup>1</sup> making it a major public health problem. Positive psychologic constructs, such as optimism and positive affect, are associated with reduced mortality in patients with and without pre-existing cardiac disease,<sup>2–4</sup> along with fewer rehospitalizations in patients with heart failure<sup>5</sup> and increased survival following cardiac surgery.<sup>6</sup> Such effects on cardiac health appear to be independent of negative affective states,<sup>4</sup> suggesting that it is not simply an absence of depression that confers the cardiovascular benefit associated with positive emotions.

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An intervention that boosts positive psychologic well-being has the potential to improve outcomes in patients with cardiovascular disease. Positive psychology interventions (PPIs) aim to cultivate positive psychologic states (e.g., optimism, gratitude, positive affect) through systematic exercises, such as performing kind acts, writing a letter of gratitude, or using personal strengths.<sup>7-9</sup> These exercises are straightforward, require minimal provider training, and have been found to consistently and substantially increase well-being and reduce depression in healthy persons.<sup>10</sup> However, despite the association of positive psychologic states with superior cardiac outcomes, there has been little study of PPIs or related programs in cardiac patients<sup>11-13</sup> and none outside the United States.

Accordingly, we adapted 3 different PPIs based on the literature<sup>7,8,14-17</sup> and performed a randomized, controlled pilot trial to determine the feasibility and preliminary efficacy of these interventions compared with a wait-list control condition in a cohort of patients with coronary artery disease who had undergone a recent cardiovascular procedure. We hypothesized, similar to effects in American cohorts, that the interventions would be feasible (over two-thirds of participants completing at least 4 of 6 sessions) and that there would be moderate effects of the intervention on outcome variables, both with respect to pre/post-changes and when compared with control participants.

## METHOD

### Participants and Recruitment

The study was approved by the Ethics Committee at The University of Isfahan. We identified patients who had coronary artery bypass surgery or percutaneous coronary intervention at 1 of 2 local medical centers within the preceding 5 months and lived in the immediate Isfahan area where the study was conducted. Both coronary artery bypass surgery and percutaneous coronary intervention are used for patients with significant stenosis of 1 or more coronary vessels, signaling that study participants had clinically significant coronary artery disease.

Figure provides a CONSORT diagram of study recruitment and enrollment. Randomly selected patients from this cohort were invited to a study introduction session. At the pre-study session, staff outlined the study rationale, intervention procedures, and follow-up

assessments. Patients were excluded if they had a major medical condition limiting their ability to participate or if currently treated with antidepressants or psychotherapy (to avoid confounding effects of the intervention). Those willing to participate and meeting study criteria completed written informed consent and baseline self-report questionnaires before the first study meeting.

### Procedures

Enrolled participants were randomly assigned to 1 of 3 PPIs (Seligman, Lyubomirsky, Fordyce; see below) or a wait-list control. The PPI participants received a 6-week intervention, described below. Wait-list participants attended a total of 4 study-related appointments (introduction session, baseline assessment, and follow-up assessments at 7 and 15 wk), and had no other study appointments or interventions outside their treatment as usual for the duration of the study.

The PPI participants underwent an in-person group training program consisting of 6 weekly 90-minute sessions. Each week, participants received a new intervention packet with activities designed to build on previously learned skills while also emphasizing novelty and variety. The PPIs (Table 1) were based on published work from authors well known in the scientific literature and lay press,<sup>7,8,14-16</sup> and designed in conjunction with a rehabilitation cardiologist to ensure that participants could safely complete them.

During each 90-minute session, a study trainer reviewed the strategies introduced in the prior session. Participants then described their experiences completing the assigned positive psychology exercises and received feedback and support from other group members. The trainer then presented the details and rationale for up to 3 strategies for the week. Next, the trainer described specific exercises to implement these strategies and allowed participants to practice them in the group. In addition, participants were encouraged to perform at least 1 exercise using each strategy before the next group session. Participants were also guided in the continued use of exercises in their daily lives, and at the final group session, received a chart to guide future exercise completion.

### Interventions

All PPI interventions were delivered by the first author (Gh.N.). The trainer became familiarized with the work of each of the 3 researchers linked to the PPIs

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