

# EFFECTIVENESS OF TRANSCENDENTAL MEDITATION ON FUNCTIONAL CAPACITY AND QUALITY OF LIFE OF AFRICAN AMERICANS WITH CONGESTIVE HEART FAILURE: A RANDOMIZED CONTROL STUDY

**Objective:** To evaluate the effectiveness of a Transcendental Meditation (TM) stress reduction program for African Americans with congestive heart failure (CHF).

**Design:** Randomized, controlled study

**Participants and Intervention:** We recruited 23 African American patients  $\geq 55$  years of age who were recently hospitalized with New York Heart Association class II or III CHF and with an ejection fraction of  $< .40$ . Participants were randomized to either TM or health education (HE) group.

**Main Outcome Measures:** Primary outcome measure was six-minute walk test; secondary outcomes were generic and disease-specific health-related quality of life, quality of well being, perceived stress, Center for Epidemiologic Studies Depression Scale (CES-D), rehospitalizations, brain natriuretic peptide, and cortisol. Changes in outcomes from baseline to three and six months after treatment were analyzed by using repeated measures analysis of variance, covarying for baseline score.

**Results:** For the primary outcome of functional capacity, the TM group significantly improved on the six-minute walk test from baseline to six months after treatment compared to the HE group ( $P=.034$ ). On the secondary outcome measures, the TM group showed improvements in SF-36 subscales and total score on the Minnesota Living with Heart Failure scale. On the CES-D, the TM group showed significant decrease from baseline to six months compared to the HE group ( $P=.03$ ). Also, the TM group had fewer rehospitalizations during the six months of followup.

**Conclusions:** Results indicate that TM can be effective in improving the quality of life and functional capacity of African American CHF patients. Further validation of outcomes is planned via a large, multicenter trial with long-term follow-up. (*Ethn Dis.* 2007;17:72-77)

**Key Words:** African Americans, Complementary Alternative Medicine, Congestive Heart Failure, Health Related Quality of Life, Stress, Transcendental Meditation

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## INTRODUCTION

Congestive heart failure (CHF) is a chronic, debilitating, and usually progressive disease that disproportionately affects African Americans.<sup>1,2</sup> Once diagnosed, this disease progresses more rapidly in African Americans than in Caucasians as evidenced by higher rates of initial and repeated hospitalizations and mortality.<sup>2,3</sup> Mortality and morbidity rates from CHF are higher for African Americans than the general population.<sup>4</sup> Studies indicate that progression of heart failure is largely influenced by neurohormone-, catecholamine-, and cytokine-mediated factors that may be amenable to interventions to decrease physiologic correlates of chronic stress.<sup>5-8</sup>

Stress is implicated in the pathogenesis and progression of heart failure. Stressful situations increase hospital readmissions in CHF patients.<sup>8</sup> Stress increases circulating catecholamines, activates the renin-angiotensin system, decreases ventricular fibrillation threshold, and increases blood pressure and

heart rate.<sup>5,8,9</sup> Depression and stress are common in hospitalized CHF patients and lead to poorer outcomes and higher costs.<sup>10</sup> African Americans with depressive symptoms show elevated risk for hypertension and atherosclerosis, which are risk factors for CHF.<sup>11</sup> Congestive heart failure (CHF) patients frequently report depression, anxiety, and hostility that may be associated with impaired physical functioning due to CHF.<sup>11-15</sup> Psychosocial stress contributes to impaired quality of life in African Americans.<sup>5,8-12</sup> All of these factors are predictors of mortality, morbidity, and hospitalization.<sup>12-15</sup>

Mental stress appears to induce myocardial ischemia more frequently in those with low ejection fraction.<sup>16</sup> This finding confirms a mechanism whereby psychosocial stress may lead to CHF progression and related clinical events. While studies of psychosocial stress and CHF are few, they indicate that mind-body interventions that favorably modify neuroendocrine homeostasis may modify CHF progression. As a response, several programs have demonstrated that patient education with post-hospital followup lowers hospital readmission for CHF and enhances quality of life.<sup>17-21</sup> However, only a few of these models have addressed the beneficial effects of stress reduction through a complementary alternative approach.

Transcendental meditation (TM) is a widely used stress reduction program. Earlier studies (clinical and observational) have reported positive benefits of TM, such as reduction in breathing rate and plasma lactate and higher basal

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