



## Gender differences in appraisal of stress and coping 5 years after heart transplantation



Kathleen L. Grady, PhD, RN, MS<sup>a,\*</sup>, Adin-Cristian Andrei, PhD<sup>a</sup>, Zhi Li, MS<sup>a</sup>,  
Bruce Rybarczyk, PhD<sup>b</sup>, Connie White-Williams, PhD, FNP<sup>c</sup>, Robert Gordon, MD<sup>d</sup>,  
Edwin C. McGee Jr., MD<sup>a</sup>

<sup>a</sup> Department of Surgery, Division of Cardiac Surgery, Northwestern University, Chicago, IL, USA

<sup>b</sup> Department of Psychology, Virginia Commonwealth University, Richmond, VA, USA

<sup>c</sup> Department of Nursing, University of Alabama Medical Center, Birmingham, AL, USA

<sup>d</sup> Department of Medicine, Division of Cardiology, Northwestern University, Chicago, IL, USA

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### ABSTRACT

**Objectives:** We examined whether gender differences exist regarding stress, symptom distress, coping, adherence, and social support 5 years after heart transplantation.

**Background:** Differences exist in health-related quality of life outcomes by gender after heart transplantation; women report poorer outcomes.

**Methods:** Patients ( $n = 210$ , female = 42), were from a prospective, multi-site, study of health-related quality of life long-term after heart transplantation. Patients completed self-report instruments 5 years after heart transplantation (mean =  $4.98 \pm 0.17$  years after transplant). Statistical analyses included two-sample  $t$ -tests, Chi-square or Fisher's exact test, and multivariable modeling.

**Results:** Women did not report more overall stress or symptom distress, but reported more difficulty adhering to the transplant regimen, yet more actual adherence than men. Women reported using more negative coping styles, but reported more satisfaction with social support.

**Conclusions:** Gender differences exist regarding appraisal of stress, coping styles, and coping resources long-term after heart transplantation. These differences may guide tailoring therapy regarding stress, poor coping, and lack of resources.

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### Introduction

Long-term survival after heart transplantation is similar for men and women.<sup>1</sup> Other outcomes after heart transplantation differ by gender. We have previously reported that being female was related to worse functional ability both early and later after heart transplantation<sup>2,3</sup> and depression later after heart transplantation.<sup>4</sup> Gender was not related to work status<sup>5</sup> or overall satisfaction with health-related quality of life, although being female was related to less satisfaction with health and functioning long-term after transplant.<sup>6</sup> Given differences in these outcomes by gender long-term after heart transplantation, we questioned whether

factors that may influence these outcomes might also differ by gender.

Previous incidental findings of gender differences regarding stress, symptom distress, coping, and adherence<sup>7–9</sup> supported our undertaking of a more rigorous examination of the influence of gender on these factors. Importantly, stress, symptom distress, coping, support, and adherence have been related to outcomes (e.g., quality of life, depression, physical function, and survival) after heart transplantation.<sup>1,3,4,6,10</sup> Understanding whether gender affects stress related to heart transplantation, appraisal of transplant-related stress, and coping may provide guidance in tailoring long-term care after heart transplantation which may improve outcomes.

Using the Lazarus and Folkman Stress, Appraisal, and Coping framework,<sup>11</sup> we examined whether gender differences exist regarding stress (e.g., stress related to illness and treatment [i.e., heart transplantation]), appraisal of stress (e.g., symptom distress, and perceived difficulty adhering to the heart transplant treatment regimen), and coping (e.g., use and effectiveness of coping styles,

\* Corresponding author. Feinberg School of Medicine, Northwestern University, Center for Heart Failure, Bluhm Cardiovascular Institute of Northwestern Memorial Hospital, Division of Cardiac Surgery, 201 East Huron Street, Galter Pavilion 11-140, Chicago, IL 60611-3056, USA. Tel.: +1 312 695 4860; fax: +1 312 695 1903.

E-mail address: [kgrady@nmh.org](mailto:kgrady@nmh.org) (K.L. Grady).

perceived adherence to the heart transplant regimen, and coping resources [e.g., social support]) at 5 years after heart transplantation, which are related to outcomes (Fig. 1). This framework has appropriately guided our research, as per Lazarus and Folkman, outcomes, including quality of life, are affected by the stresses of living, evaluation of those stresses, and how individuals cope.<sup>11</sup> We hypothesized that female heart transplant recipients would report more overall stress and symptom distress, use of more negative coping styles, more difficulty adhering to the transplant medical regimen, less adherence to the transplant regimen, and less satisfaction with social support than men.

## Methods

### Design

The study used a prospective, multi-site, longitudinal, observational design.

### Sample

Patients for this secondary analysis were from a study of HRQOL outcomes at 5–10 years after heart transplantation. The study cohort was from a pool of 1437 adult patients who were transplanted between July 1, 1990 and June 30, 1999 at 4 medical centers in the United States. Inclusion criteria were age  $\geq 21$  years, ability to read and write English, and physically able to participate. Of the 1437 patients, 884 were potentially eligible to enroll in our study, 597 were enrolled, and 555 patients completed one or more booklets of questionnaires over time. Two hundred eighty-seven patients were not enrolled, and 127 of them chose not to participate. Reasons for non-enrollment are documented elsewhere.<sup>6</sup> When consented patients ( $n = 597$ ) were compared to patients who did not consent ( $n = 127$ ), there were no statistically significant differences between groups for gender.<sup>6</sup> Two hundred ten of the 555 patients were 5 years post heart transplantation and comprise the sample for this report (Fig. 2). Of the 210 patients, 42 (20%) were women, which is similar to the 22% of women who

underwent heart transplantation during the era of data collection for our report, per the International Society of Heart and Lung Transplantation Registry.<sup>12</sup>

### Instruments

Self-report questionnaires used for this report were completed by paper and pencil at 5 years after heart transplantation. Questionnaires, aligned with our Stress and Coping Framework, measured the following constructs: (1) frequency and intensity of stress (Heart Transplant Stressor Scale<sup>13</sup>); (2) appraisal of stress (symptom frequency and distress (Heart Transplant Symptom Checklist<sup>14</sup>)) and perceived difficulty with adherence to the medical regimen (Assessment of Problems with the Heart Transplant Regimen<sup>15</sup>); and (3) coping and coping resources (coping use and perceived effectiveness (Jalowiec Coping Scale<sup>16</sup>)), perceived actual adherence with the medical regimen (Assessment of Problems with the Heart Transplant Regimen<sup>15</sup>), and satisfaction with social support (Social Support Index<sup>17</sup>).

### Stress

We defined stress as “a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being.”<sup>11</sup> The Heart Transplant Stressor Scale includes 81 items that measure stress related to physical, psychological, self-care, family, work/school/financial, and hospital/clinic dimensions (0 = not stressful at all to 3 = very stressful).<sup>13</sup> Psychometric support is adequate for this instrument. Homogeneity reliability is supported (Cronbach’s alpha coefficients = 0.95 for the entire scale and 0.78–0.90 for the dimensions).<sup>13</sup> Validity was also acceptable.<sup>13</sup>

### Appraisal of stress

Evaluation of stress included measures of symptom distress and difficulty adhering to the medical regimen. Symptom distress occurs in response to the perception of an abnormal physical, emotional, or cognitive state (e.g., cramps in feet, mood swings, and problems with memory).<sup>18</sup> The Heart Transplant Symptom

## Stress and Coping Framework

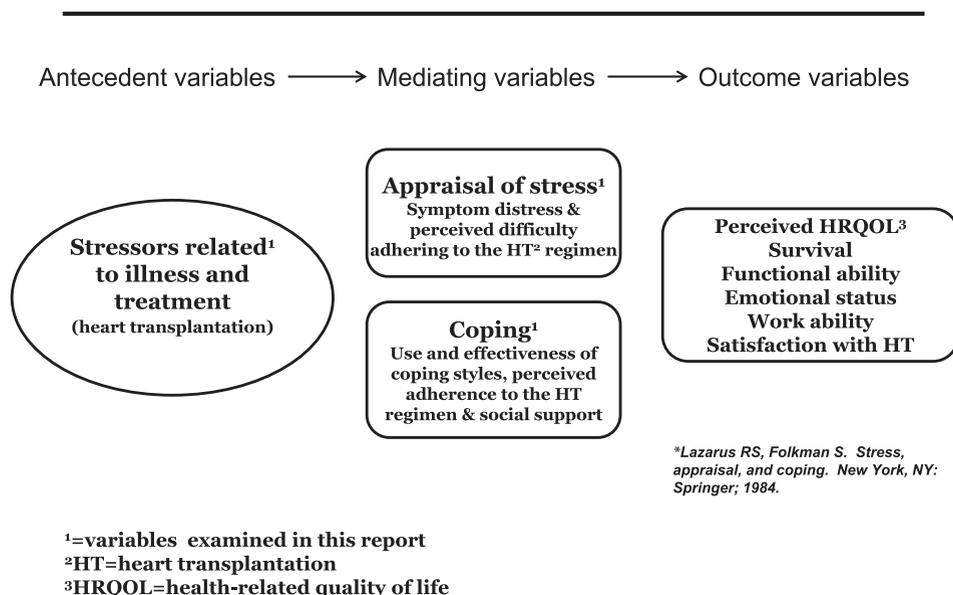


Fig. 1. Stress and coping framework for patients who undergo heart transplantation.

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