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The Relationship of Sociodemographic Factors and Satisfaction with Social Support at 5 and 10 years after Heart Transplantation

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Abstract

Background—Despite the fact that social support has been found to be important to cardiovascular health, there is a paucity of information regarding the relationship between social support and outcomes long-term after heart transplantation (HT). The purposes of this study were to examine demographic and psychosocial characteristics and their relationship to social support after HT, and identify if sociodemographic variables are predictors of satisfaction with social support post HT.

Methods—Data were collected from 555 HT patients (pts) (78% male, 88% white, mean age=53.8 years at time of transplant) at 4 U.S. medical centers using the following instruments: Social Support Index, QOL Index, HT Stressor Scale, Jalowiec Coping Scale, Sickness Impact Profile, Cardiac Depression Scale, and medical records review. Statistical analyses included t-tests, correlations, and linear and multivariable regression.

Results—There were no associations between education, and ethnicity and perception of social support at 5 and 10 yrs after HT. Married and older pts reported higher satisfaction with social support after HT. Being married and higher education were predictors of better overall satisfaction with social support at 10 years post heart transplantation.

Conclusions—Knowledge of relationships among sociodemographic factors and social support may assist clinicians to address social support needs and resources long-term after HT.

INTRODUCTION

Heart transplantation is a life sustaining, but complex, treatment for patients with advanced heart failure. While there is evidence to suggest that social support is associated with health outcomes in the general population,^{1,2} there is a paucity of information regarding social support and heart transplantation. Specifically, the relationships between sociodemographic

factors and social support have not been explored in patients long-term after heart transplantation. However, sociodemographic factors and social support have been studied in cardiovascular and other chronic disease populations.^{3–9} Several studies have reported gender, age, and racial differences in social support, and the adverse impact of living alone on health outcomes, including health-related quality of life (HRQOL). Studies examining differences in social support across these different domains among cardiovascular and other chronic disease patients are reviewed below.

Gender

Several studies examining gender in cardiac and chronic disease populations have revealed that women reported less perceived social support,^{10,11} significantly worse HRQOL,^{10,11,12,13} and poorer health status outcomes than men.^{14,15} In a few studies, there were no differences in perceived social support,^{15,16,17} or HRQOL¹⁸ between men and women. Also, men and women were found to cope differently,¹⁹ with women using more optimistic coping strategies than men.

Age

Existing research examining age differences in social support with cardiac and chronic disease populations is limited. Bennett¹⁶ and colleagues examined the interactions of gender by age in social support for chronic heart failure patients. The authors found that men under the age of 65 perceived less social support as compared to men older than 65 years of age and women in either age group. These significant findings were detected in the areas of total social support, emotional/informational support, and positive social interactions in their study of healthy older adults and older adults with heart failure. Heo²⁰ and colleagues reported that better social support was associated with poorer HRQOL in healthy adults, but not in heart failure patients. In our recent study on older age patients after heart transplantation, older transplant patients reported better social support than middle aged and younger patients.²¹

Race

Two studies examined racial differences in social support specific to cardiac patients. Rankin²² compared social support in 76 African American and Caucasian women recovering from acute myocardial infarction, and found that perceived social support did not differ between groups; however, the types of support differed between the groups. African American women received more educational support, while Caucasian women received more emotional support. Bosworth¹² and colleagues found that minority coronary artery disease patients with poorer social support had poorer general health, social functioning, and mental health.

Marital Status

Previous research on the association of living arrangements (married, living with a companion, living alone) as a measure of social support on outcomes in patients with cardiovascular disease are equivocal. Several studies have shown strong relationships among being married or living with a partner and mortality and HRQOL,^{12,23,24,25,18} while others did not demonstrate this relationship.^{26,27}

The potential for adverse outcomes with poor social support, as reported in the cardiovascular literature, and the paucity of literature on relationships between sociodemographic factors and social support in the heart transplant literature provides the motivation for us to explore these relationships after transplant. In our previous study of HRQOL after heart transplantation in this same database of patients, we found that older age

and more satisfaction with overall social support were predictors of better HRQOL at 5 years post transplant and more satisfaction with emotional support was a predictor of HRQOL at 10 years post transplant.²⁸ Therefore, to further understand these relationships, the purpose of this study was to examine the relationship between sociodemographic factors and satisfaction with social support, and to identify predictors of satisfaction with social support in patients who were 5 and 10 years post heart transplantation.

Social support, for the purpose of this study, is defined as the degree of perceived satisfaction with social support which is provided by others.¹⁶ Tangible support is the provision of material support such as financial assistance. Emotional support is the provision of closeness, intimacy, and the ability to confide feelings to someone.

METHODS

Sample and Setting

This study is a secondary analysis of a larger study of HRQOL outcomes long-term after heart transplantation.¹⁸ The parent study was conducted from April 2000 to December 2004 at 4 transplant centers in the U.S. Time periods examined for this analysis were year 5 (n=205) and year 10 (n=104) after transplant. Patients were mostly Caucasian (88%) and male (78%). The mean age of the sample was 54 years at the time of transplantation. Patients were fairly well educated (mean=14 years), and most patients had private health insurance or Medicare. Study inclusion criteria were age ≥ 21 years, able to read and write English, and being physically able to participate.

Instruments

Self-report instruments used in this study included the Heart Transplant Social Support Index¹⁸, Sickness Impact Profile²⁹, Heart Transplant Stressor Scale¹⁸, and Cardiac Depression Scale.³⁰ The overall scores from the Sickness Impact Profile, Heart Transplant Stressor Scale, and the Cardiac Depression Scale were used to examine if relationships exist among psychosocial and sociodemographic variables. Psychometric support for all self-report instruments is acceptable.^{18,29,30} (Table 1).

Sociodemographic data were collected from the participants and medical records review. The study also used data compiled from the Cardiac Transplant Research Database (CTRD) which is an event-driven database that collected the following data: immunosuppression, episodes of rejection, infection, cardiac allograft vasculopathy, malignancy, death, and donor-related data.

Procedures

Institutional Review Board approval was granted by each institution to conduct the parent study and collect data from the CTRD. Written informed consent was received from patients participating in our study. Self-report instruments and medical records review data collected by research coordinators at both 5 and 10 years after transplant were used for this report.

Statistical Analyses

SAS Software Version 9.1 (SAS Institute, Inc., Cary, NC) was used for descriptive and inferential data analysis. A p-value of ≤ 0.05 was considered statistically significant. T-tests were used to test for differences in satisfaction with social support by age, gender, marital status, and race at 5 and 10 years post transplant. Multiple regression analyses were used to examine if sociodemographic and psychosocial variables were predictors of satisfaction with social support. Variables entered into the model were 1) age, gender, race, marital status, education; and 2) physical and psychosocial disability, physical and psychological stress,

depression, positive and negative coping, positive or negative mood. Regression assumptions, including those for multicollinearity, were assessed and met.

RESULTS

Gender

Men reported more satisfaction with emotional support, as compared to women, at 5 years after heart transplant (Table 2). There were no differences in tangible or overall satisfaction with support; however, there was a trend toward more satisfaction in men versus the women. There were no gender differences in satisfaction with social support at 10 years after heart transplantation (Table 2).

Age

At 5 years post heart transplant, older recipients were more satisfied with overall and emotional support than younger recipients, but there was no difference in satisfaction with tangible support by age (Table 3). Older heart transplant survivors were more satisfied with emotional, tangible, and overall social support than younger transplant survivors at 10 years post transplant (Table 3).

Race

There were no differences in satisfaction with emotional, tangible, or overall social support among Caucasian and Non-Caucasian transplant recipients at 5 and 10 years post transplant (Table 4).

Marital Status

At 5 years after heart transplantation, there were no differences in satisfaction with social support between married and non-married patients (Table 5). At 10 years post heart transplant, there were significant differences in satisfaction with social support, with married heart transplant recipients being more satisfied with emotional, tangible, and overall support than unmarried recipients (Table 5).

Predictors of Satisfaction with Social Support

Using multivariate regression, no sociodemographic factors were predictive of more overall satisfaction with social support at 5 years after transplant. However, being female approached significance. Being married and more highly educated predicted more overall satisfaction with social support at 10 years after heart transplantation (Table 6). Importantly, when psychological variables were added to the model, having depression was a predictor of more satisfaction with social support at both 5 and 10 years (Table 6).

DISCUSSION

To our knowledge, we are the first to report on the relationship between sociodemographic factors and social support after heart transplantation. Men were more satisfied with emotional support at 5 years after transplant, and married patients were more satisfied with both emotional and tangible support 10 years after transplant. In addition, older patients were more satisfied with emotional support at 5 years and tangible support at both 5 and 10 years. We found no sociodemographic factors that were predictive of better overall satisfaction with social support at 5 years after transplant. Of importance, being married and higher education were predictors of better overall satisfaction with social support at 10 years after heart transplantation.

Our finding that men were more satisfied with emotional support than women at 5 years after transplant was similar to other studies of cardiovascular patients.^{10,11,14,15} This finding could be due to the differences in the perception of caregiving between men and women and needs to be further explored. Interestingly, this finding was not detected at 10 years post transplant. By 10 years post transplantation, gender-related social support needs may have been addressed. Bosworth¹² and colleagues found that women with coronary artery disease reported poorer HRQOL than men. While the authors did not report gender differences in social support, they did report that lack of social support was associated with significantly lower HRQOL. Similarly, in their study on HRQOL in 410 cardiac patients, Emery¹⁰ and colleagues examined the relationships among HRQOL and appraisal, tangible, belonging, and esteem-related social support. There was a significant interaction of gender by belonging social support ($p=0.009$), but no other support-related interactions were detected. Also, our report is the first in the heart transplant literature to demonstrate the lack of gender differences in tangible support. Neither Artinian¹⁴ and colleagues nor Bennett¹⁶ and colleagues found gender differences in tangible support in the cardiovascular/heart failure literature.

Similar to Bennett¹⁶ et al. in their study of heart failure patients, we found differences in social support by age at both 5 and 10 years after transplant. Older recipients were more satisfied with overall and emotional support, but there was no difference in satisfaction with tangible support between older and younger recipients at 5 years. Older patients may deal with retirement, bereavement, and fewer social resources which may make existing support from others more important.³³ While not significantly different, older patients were slightly more satisfied with tangible support 5 years after transplant. At 10 years after transplant, older heart transplant patients were more satisfied with emotional, tangible, and overall social support than younger transplant patients. This finding may reveal a time in life wherein older patients are content and social support needs have been fulfilled; however, most evidence suggests that middle adults may have increases in support while in later adulthood, that support diminishes.³³

Few studies were found in the literature examining race and social support. We found no differences in satisfaction with emotional, tangible, or overall social support among Caucasian and Non-Caucasian transplant recipients at 5 and 10 years. This result is similar to Rankin and colleagues⁹ who found no differences in social support by race. However, Rankin³¹ et. al. did report differences in types of support received by race. African American women received more instructional types of support while Caucasian women received more comforting support.

The difference in our findings of the relationship between marital status and social support at 5 and 10 years are interesting. We found no differences in social support by marital status at 5 years after heart transplant while at 10 years, married patients were more satisfied with emotional, tangible, and overall social support. Once again, time and stability may be a factor in this relationship. Case²² and colleagues examined marital status in 1,234 post myocardial infarction patients for 1 to 4 years. Living alone was an independent risk factor for mortality. Furthermore, those living with more than two persons had better survival than those living with one person or alone. Bosworth¹² and colleagues reported that individuals living alone had lower social functioning than those who were married. Conversely, Luttik²⁵ and colleagues reported no difference in mortality between heart failure patients living alone or with a partner. Also, univariate differences in HRQOL were found between patients living alone and with a partner; however, this difference was no longer significant in multivariate analyses. Two investigators found being married was associated with better HRQOL.^{18,22} Also, Glynn³² et. al., concluded from their study on gender, social support,

and cardiovascular response to stress that men may be healthier because they marry women who provide social support.

Contrary to expectation, depression was found to be a predictor of better satisfaction with social support at both 5 and 10 years after transplant. This finding has not been examined in the heart transplant population. Other studies in the general and cardiovascular population found strong associations between depression and social support^{34,35} while others did not.³⁶ Conceivably, patients with depression could be receiving therapy such as counseling or meditation and thus, be more satisfied with social support. However, further research is warranted on the association of social support and depression.

Our study has some limitations. While our study sought to examine emotional and tangible support; it did not include other types of support such as informative or appraisal support which may be important to further understanding social support. Also, the small number of women, non-Caucasian, and non married patients in our sample at 10 years after transplant may limit the reliability of our findings. Lastly, we measured social support in long-term survivors of heart transplantation, which may introduce bias into our findings. However, our large sample size and inclusion of patients from multiple sites in the U.S. support the generalizability of our findings.

CONCLUSION

Our study demonstrates an important relationship between sociodemographic factors and satisfaction with social support long-term after heart transplantation. Being married and having higher education are predictors of satisfaction with social support at 10 post transplant when controlling for other factors.

Our study provides evidence that as health care providers, we need to be attentive to sociodemographic characteristics in relation to satisfaction with social support. Specifically, patients who are not married and less educated may need more tailored interventions geared toward securing social support resources. Also, patients with depression may need additional social support. Further investigation is needed to understand the relationship of sociodemographic characteristics with other types of social support. Relationships between satisfaction with social support and other post transplant outcomes (e.g. depression, adherence) also require study. Further exploratory studies of social support after heart transplantation can contribute to enhancements in clinical care of heart transplant recipients.

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Table 1

Description of Instruments

Instrument	Description
Social Support Index ^{18,27}	The SSI measures structural aspects of the support network, functional types of assistance received, and satisfaction with support. The tool has 2 parts: Part A, assesses satisfaction with amount of help received for each of 15 tasks such as personal care, taking medications, and being available to talk. Scale scores for Part A are obtained by calculating the mean level of satisfaction with support for each of the 5 emotional support and 10 tangible support questions. A lower satisfaction score (0 = very satisfied and 1 = very dissatisfied) indicates greater satisfaction with support using a 0 to 1 scale. Thus, a score closer to 0 indicates more satisfaction with social support. The SSI has psychometric support in the heart transplant literature.
Demographic Variables ¹⁸ selected were: age, gender, race, marital status, years of education, current employment	Collected from medical records and patient-completed demographic form
Heart Transplant Stressor Scale ^{18,27}	This 81-item tool measures areas of stress in 6 subscales: physical, hospital/clinic, self-care, family, work/financial, and psychological.
Sickness Impact Profile ²⁸	This 136-item instrument has 12 subscales: sleep/rest, self-care, emotional behavior, home management, mobility, social interactions, ambulation, alertness, communication, recreation, eating, and work. Responses are yes/no and weighted by the amount of disability for each item. Higher scores equal more disability.
Cardiac Depression Scale ²⁹	The Cardiac Depression Scale (CDS), a 26-item instrument has 7 sub-scales: sleep, uncertainty, mood and hopelessness, anhedonia, cognition, and inactivity that are rated on a 7-point scale of agreement. The range of scores for this instrument is 1 to 156, with a score of >100 indicating more severe depression.

Table 2

Gender Differences in Satisfaction with Social Support at 5 and 10 Years after Heart Transplantation

	n	M ± SD	n	M ± SD	t	p
Satisfaction with Social Support at 5 Years						
Emotional	148	0.06 ± 0.14	38	0.14 ± 0.20	2.29	0.03
Tangible	150	0.04 ± 0.09	40	0.09 ± 0.07	1.85	0.07
Overall	150	0.05 ± 0.10	40	0.10 ± 0.15	1.94	0.06
Satisfaction with Social Support at 10 Years						
Emotional	72	0.03 ± 0.10	22	0.07 ± 0.12	1.23	0.23
Tangible	77	0.03 ± 0.08	23	0.05 ± 0.10	1.04	0.30
Overall	82	0.03 ± 0.08	21	0.07 ± 0.11	1.12	0.27

(Based on Scale 0–1, Lower Score = More Satisfaction)

Table 3
Age Differences in Satisfaction with Social Support at 5 and 10 Years after Heart Transplantation

		Older (> 60 yrs)		Younger (60yrs)			
		n	M ± SD	n	M ± SD	t	p
Satisfaction with Social Support at 5 Years							
Emotional		71	0.04 ± 0.10	116	0.09 ± 0.17	2.42	0.02
Tangible		71	0.04 ± 0.08	120	0.06 ± 0.12	1.42	0.16
Overall		75	0.04 ± 0.08	125	0.07 ± 0.11	1.93	0.05
		n	M ± SD	n	M ± SD	t	p
Satisfaction with Social Support at 10 Years							
Emotional		26	0.02 ± 0.10	67	0.08 ± 0.10	3.06	0.003
Tangible		25	0.03 ± 0.08	74	0.07 ± 0.10	2.43	0.02
Overall		28	0.01 ± 0.03	77	0.05 ± 0.10	2.96	0.004

(Based on Scale 0–1, Lower Score = More Satisfaction)

Table 4

Race Differences in Satisfaction with Social Support at 5 and 10 Years after Heart Transplantation

	n	M ± SD	n	M ± SD	t	p
Satisfaction with Social Support at 5 Years						
Emotional	172	0.07 ± 0.15	15	0.11 ± 0.13	-1.06	0.30
Tangible	176	0.05 ± 0.11	15	0.06 ± 0.09	-0.22	0.83
Overall	184	0.06 ± 0.11	16	0.07 ± 0.09	-0.35	0.73
Satisfaction with Social Support at 10 Years						
Emotional	80	0.03 ± 0.10	14	0.07 ± 0.13	-0.90	0.40
Tangible	85	0.03 ± 0.09	13	0.05 ± 0.08	-0.95	0.35
Overall	91	0.03 ± 0.09	14	0.06 ± 0.09	-1.00	0.34

(Based on Scale 0–1, Lower Score = More Satisfaction)

Table 5
Marital Status Differences in Satisfaction with Social Support at 5 and 10 Years after Heart Transplantation

	n	M ± SD	n	M ± SD	t	p
Satisfaction with Social Support at 5 Years						
Emotional	144	0.06 ± 0.14	42	0.12 ± 0.20	-1.72	0.09
Tangible	147	0.05 ± 0.10	43	0.07 ± 0.11	-1.36	0.18
Overall	154	0.05 ± 0.11	45	0.09 ± 0.12	-1.90	0.06
	n	M ± SD	n	M ± SD	t	p
Satisfaction with Social Support at 10 Years						
Emotional	73	0.02 ± 0.07	20	0.10 ± 0.17	-2.03	0.05
Tangible	76	0.02 ± 0.06	23	0.09 ± 0.14	-2.17	0.04
Overall	82	0.02 ± 0.06	23	0.09 ± 0.14	-2.22	0.04

(Based on Scale 0–1, Lower Score = More Satisfaction)

Table 6

Multiple regression of demographic and psychosocial variables on overall social support satisfaction

Variables	5 Years after HT			10 Years after HT		
	B	SE	P value	B	SE	P value
Physical and Psychosocial						
Disability	0.0145	0.0957	0.8796	0.1850	0.1133	0.1059
Heart Transplant Stressor	0.0000	0.0007	0.9496	-0.0003	0.0010	0.7574
Depression	0.0015	0.0004	0.0004	0.0010	0.0004	0.0187
Age (Older)	0.0023	0.0160	0.8851	0.0192	0.0173	0.2705
Gender (Male)	0.0386	0.0202	0.0573	0.0068	0.0193	0.7257
Race (White)	-0.0049	0.0274	0.8594	-0.0013	0.0225	0.9556
Marital status (Married)	-0.0229	0.0186	0.2211	-0.0524	0.0184	0.0054
Education (Higher)	-0.0117	0.0152	0.4403	-0.0324	0.0149	0.0329