IS RACE ASSOCIATED WITH HEALTH-RELATED QUALITY OF LIFE IN OLDER PATIENTS AFTER ADVANCED CARDIAC SURGICAL THERAPIES?

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BACKGROUND

Race is associated with heart failure outcomes. There is limited knowledge about the association of race with health-related quality of life (HRQOL) outcomes after long-term mechanical circulatory support (MCS) (i.e., destination therapy) or heart transplantation (HT), especially in older patients.

PURPOSE

The aim of this study was to determine whether race is associated with overall HRQOL in older (60-80 years) patients who undergo long-term MCS or HT (with MCS as a bridge to transplant (HT BTT) or no MCS before transplant (HT Non-BTT).

METHODS

This study was a secondary analysis of data from the Sustaining Quality of Life of the Aged: Heart Transplant or Mechanical Support study (SUSTAIN-IT), which has a prospective, longitudinal, multi-site, observational, comparative effectiveness research design.

Inclusion criteria

- Advanced heart failure
  - -listed with the United Network for Organ Sharing (UNOS) for a "primary" HT (HT BTT or HT Non-BTT)
  - or
  - -being considered for/scheduled to receive a "primary" long-term LVAD with a low probability of cross-over to HT
- Able to speak, read, and understand English
- -Willing to participate, provide written informed consent

Exclusion criteria

Prior HT or listed for multiple organ transplantation

Long-term MCS candidate with a prior MCS device

-SUSTAIN-IT study participants were recruited and enrolled between 10/1/2015–12/31/2018. Of 635 patients with advanced heart failure approached, 396 were recruited and enrolled in SUSTAIN-IT at 13 U.S. medical centers with HT and MCS programs.

-The sample at post-operative year 1 included 144 patients with long-term MCS, and 161 HT recipients (68 HT BTT, and 93 HT Non-BTT). Of 305 patients who had surgery (long-term MCS or HT), follow-up data were available at 12 months for 107 patients in the long-term MCS group, 56 patients in the HT BTT group, and 87 patients in the HT Non-BTT group.

Measures and Procedures

-Kansas City Cardiomyopathy Questionnaire-12 (KCCQ-12) is a 12-item heart failure–specific HRQOL questionnaire with four domains: physical limitations, symptom frequency, social limitations, and QOL, which combine to create an overall summary score (OSS).

- Patients completed self-report HRQOL surveys before surgery and after surgery at 3, 6, 12 months.

-Medical records data were collected by sites or downloaded from STS INTERMACS at regular intervals.

Statistical Analyses

-Descriptive statistics
  - -mean + standard deviation (SD)
  - -counts/percentages

-Multivariable linear mixed models
  - -Covariates at the p = 0.2 level from the univariable analysis were included in the multivariable model.
  - -Race and surgical strategy were forced into the multivariable model

-Statistical significance was set at $p < 0.05$

RESULTS

Demographic Characteristics	Entire Cohort (N = 305)	White (N = 254)	Minorities (N = 51)	p-value
Age (years; Mean ± SD)	66.2 ± 4.7			
Long-term MCS		68.5 ± 5.3	68.6 ± 4.6	0.98
HT BTT		64.2 ± 3.3	63.3 ± 2.7	0.39
HT Non-BTT		64 ± 2.7	64 ± 3.2	1.00
Sex (Male) No. (/%)	238 (78%)			
Long-term MCS		101 (86%)	12 (44%)	<.0001
HT BTT		48 (86%)	7 (58%)	0.044
HT Non-BTT		63 (78%)	7 (58%)	0.16
Marital Status: Married/Domestic partners, No. (%)	237 (78%)			
Long-term MCS		95 (82%)	14 (54%)	0.002
HT BTT		48 (86%)	5 (42%)	0.003
HT Non-BTT		69 (85%)	6 (50%)	0.010
Education (more than HS), No. (%)	197 (71%)			
Long-term MCS		75 (75%)	13 (52%)	0.024
HT BTT		36 (72%)	8 (80%)	0.72
HT Non-BTT		55 (68%)	10 (83%)	0.34
Insurance type: Long-term MCS, No. (%)				0.27
Medicare/Medicaid		83 (71%)	22 (81%)	
Private Insurance		34 (29%)	5 (19%)	
Insurance type: HT BTT				0.52
Medicare/Medicaid		35 (63%)	9 (75%)	
Private Insurance		21 (38%)	3 (25%)	
Insurance type: HT Non-BTT				0.30
Medicare/Medicaid		41 (51%)	8 (67%)	
Private Insurance		40 (49%)	4 (33%)	

Clinical Characteristics	Entire Cohort (N = 305)	White (N = 254)	Minorities (N = 51)	p-value
Comorbidities (Mean ± SD)	4 ± 2.1			
Long-term MCS		5 ± 2.3	5 ± 1.4	0.28
HT BTT		4 ± 1.8	4 ± 1.1	0.86
HT Non-BTT		4 ± 1.8	4 ± 2.1	0.32
Arrhythmia, No. (%)	185 (61%)			
Long-term MCS		81 (69%)	12 (44%)	0.015
HT BTT		35 (63%)	7 (58%)	1.00*
HT Non-BTT		46 (57%)	4 (33%)	0.13
Hypertension, No. (%)	182 (60%)			
Long-term MCS		76 (65%)	18 (67%)	0.87
HT BTT		30 (54%)	7 (58%)	0.76
HT Non-BTT		44 (54%)	7 (58%)	0.79
Hyperlipidemia, No. (%)	180 (59%)			
Long-term MCS		74 (63%)	16 (59%)	0.70
HT BTT		37 (66%)	3 (25%)	0.021*
HT Non-BTT		44 (54%)	6 (50%)	0.78
Diabetes, No. (%)	137 (45%)			
Long-term MCS		64 (55%)	16 (59%)	0.67
HT BTT		24 (43%)	4 (33%)	0.75*
HT Non-BTT		23 (28%)	6 (50%)	0.18*
CKD, No. (%)	114 (37%)			
Long-term MCS		51 (44%)	14 (52%)	0.44
HT BTT		16 (29%)	7 (58%)	0.09*
HT Non-BTT		19 (24%)	7 (58%)	0.033*
Pulmonary HTN, No. (%)	63 (21%)			
Long-term MCS		25 (21%)	7 (26%)	0.61
HT BTT		15 (27%)	5 (42%)	0.32*
HT Non-BTT		9 (11%)	2 (17%)	0.63*
History Of Cancer, No. (%)	44 (14%)			
Long-term MCS		20 (17%)	6 (22%)	0.58*
HT BTT		3 (5%)	3 (25%)	0.06*
HT Non-BTT		10 (12%)	2 (17%)	0.65*

Factors Associated With Health-Related Quality of Life for Heart Transplantation or Long Term Mechanical Circulatory Support Patients, at 1 Year Post-Operatively, Using Multivariable Linear Mixed Models Analyses

Covariates	Beta coefficient	95% confidence limit		p-value
Change in Kansas City Cardiomyopathy Questionnaire-12 overall summary score, R^2: 0.327, n = 232				
Intercept	62.9			<0.0001
Race* (White)	5.62	−0.92	12.54	0.11
Patient group				
HT BTT*	17.53	8.83	24.61	<0.0001
HT Non-BTT*	21.85	17.33	28.62	<0.0001
Long-term MCS	REF	REF	REF	REF
Sex (male)	7.92	1.18	13.64	0.02
NYHA Class III & IV (baseline, grouped)	−8.34	−18.17	−2.74	0.04
NYHA Class I & II (baseline, grouped)	REF	REF	REF	REF
# of AEs	−2.09	−4.36	−1.42	0.01

-The multivariable linear mixed models revealed that race was not a risk factor for poorer HRQOL outcomes using the KCCQ-12 OSS.

-White participants (long-term MCS group) had, on average, a higher KCCQ-12 OSS than minority participants; however, the association of race with overall HRQOL was not statistically significant at 1 year.

-Sex (male), HT BTT and HT Non-BTT were associated with higher KCCQ-12 OSS, while NYHA class III/IV, and number of post-operative adverse events were associated with lower KCCQ-12 OSS (model R^2=0.33).

IMPLICATIONS

-Identifying factors associated with overall HRQOL may inform post-operative care for these older, vulnerable patients who undergo HT or long-term MCS.

CONCLUSIONS

-Race was not significantly associated with overall HRQOL.

-Race was defined as a single biological variable, rather than as a social construct, which may have influenced findings.

ACKNOWLEDGEMENT

This work was sponsored by the National Institutes of Health, National Institute on Aging (NIA), The Impact of Race on Quality of Life of the Aged after Heart Transplant or Destination Therapy Mechanical Support (5R36AG073531, Dixon-Evans J [PI]).