



Health Status Variation Across Practices in Outpatients with Heart Failure: Insights from the CHAMP-HF Registry



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BACKGROUND

- ❖ A key goal of heart failure (HF) management is to optimize patients' health status (their symptoms, function, and quality of life)
- ❖ Prior studies have described variation between healthcare systems and providers using HF-related morbidity and mortality
- ❖ No studies to date have examined health status differences across outpatient practices

METHODS

- ❖ CHAMP-HF is a multicenter, observational registry of US sites that captures contemporary treatment patterns in patients with HFREF (LVEF ≤ 40%) between December 2015 – March 2017
- ❖ The primary outcome for this *cross-sectional* analysis was the Kansas City Cardiomyopathy Questionnaire (KCCQ) – a reliable and sensitive PROM for heart failure patients
- ❖ The KCCQ-OS (summary score) and KCCQ-SF (symptom frequency score) were used to capture a clinically relevant summary of all HF domains and symptom burden
- ❖ KCCQ-OS and KCCQ-SF scores ranges from 0 to 100 (higher scores reflect better health status) and a 5-point change in KCCQ-OS is clinically meaningful
- ❖ An adjusted median odds ratio (aMOR) was calculated to estimate the mean relative difference in two statistically identical patients having excellent health status (KCCQ-OS ≥ 75) or minimal-no symptoms (KCCQ-SF ≥ 75) at any two CHAMP-HF sites
- ❖ Hierarchical multivariable linear regression, with site as a random effect, was used to determine the mean difference in KCCQ-OS and KCCQ-SF score for each site characteristic (Table 1 and 2)
- ❖ We described the site-specific proportion of patients exhibiting KCCQ-OS or KCCQ-SF scores ≥ 75

Characteristics	Overall (%) or Median (Q1-Q3)
Age	68.0 (59.0-75.0)
Male	2473 (70.8%)
Caucasian	2616 (74.9%)
African American	572 (16.4%)
Hispanic	589 (16.9%)
COPD	1054 (30.2%)
CKD	693 (19.8%)
Depression	874 (25.0%)
Diabetes Mellitus	1426 (40.8%)
Tobacco Use/Smoking	689 (19.7%)
Atrial Fibrillation	1258 (36.0%)
Coronary Artery Disease	2177 (62.3%)
CRT Therapy	234 (6.7%)
Number of Prior Hospitalizations within 12 Months of Screening	
0	2173 (62.2%)
1	886 (25.4%)
≥2	435 (12.4%)
Vital Signs on Enrollment	
Systolic (mmHg)	120 (110-131)
Heart Rate (bpm)	72 (66-81)
Clinical Measures and Lab Results	
LVEF (%)	30 (23-35)
NT-proBNP (pg/mL)	2013 (794-5490)
Medication on Enrollment	
ACEi/ARB	2102 (60.2%)
Beta-Blocker	2894 (82.8%)
MRA	1161 (33.2%)
ARNI	451 (12.9%)
Loop Diuretic	2139 (61.2%)
Hydralazine	193 (5.5%)
Digoxin	475 (13.6%)
Ivabradine	42 (1.2%)
Site Characteristics	
Median (IQR) Enrolled per Site	22.5 (8.0, 37.0)
Family Practice	219 (6.3%)
Internal Medicine	273 (7.8%)
HF Specialist	807 (23.1%)
Other Cardiologist	2128 (60.9%)
Number of HF Patients Managed Annually	1200 (480-3000)

Abbreviations: COPD (chronic obstructive pulmonary disease), CKD (chronic kidney disease), CRT (cardiac resynchronization therapy), LVEF (left ventricular ejection fraction), ACEi (angiotensin-converting enzyme inhibitor), ARB (angiotensin receptor blocker), MRA (mineralocorticoid antagonist), ARNI (angiotensin II receptor blocker), HF (heart failure).

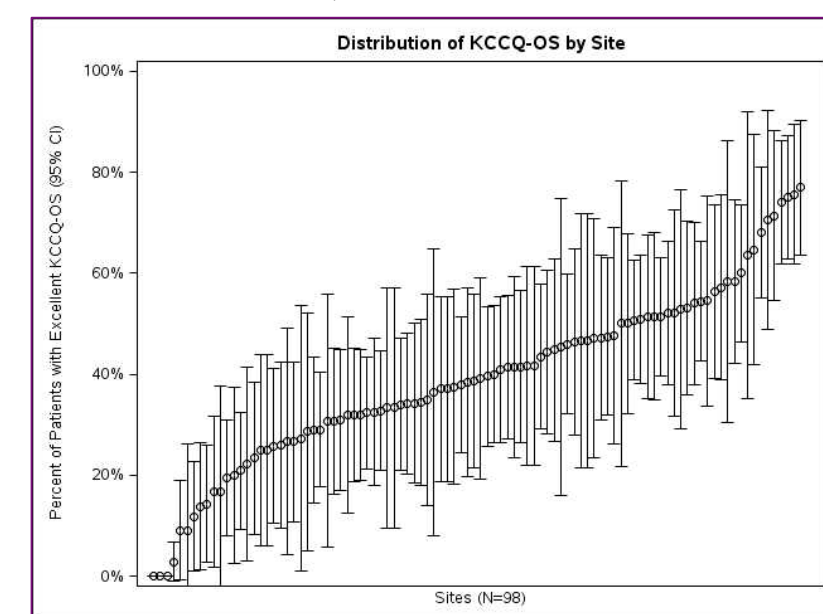
RESULTS

- ❖ The overall mean (±SD) KCCQ-OS was 64.2 (±24), with the following distributions of patient health status observed: poor (<25; n = 228, 6.5%), fair (25-49; n = 785, 22.5%), good (50-74; n = 1101, 31.5%), and excellent (≥75 n = 1380, 39.5%)
- ❖ The overall mean KCCQ-12-SF score was 68.9 (±25.6), with the following distributions of symptom frequency: daily (<40; n = 548, 15.7%), weekly (40-74; n = 1,186, 33.9%), monthly (75-99; n = 1,219, 34.9%), and minimal-no symptoms (100; n = 541, 15.5%)

Table 1. Mean Difference in KCCQ-OS Scores

Site characteristics	Point Estimate 95% CI	P Value
Physician Specialty (ref: family medicine)		
Internal Medicine	3.7 (-2.3, 9.7)	0.228
HF Specialist	6.5 (0.5, 12.4)	0.033
Other Cardiologist	6.5 (1.4, 11.7)	0.012
HF Patients Managed Annually (Num.)	0.6 (-0.7, 2.0)	0.372
Access to Cardiac Rehabilitation	2.0 (-1.0, 5.0)	0.184
Dedicated for Patients with HF	-0.4 (-3.3, 2.5)	0.790
Routine Site Collection of PROs	0.0 (-2.6, 2.6)	0.992
Suburban	3.2 (0.2, 6.1)	0.034
Rural	0.6 (-2.7, 4.0)	0.705
Patient Telemonitoring Resources	0.2 (-2.6, 2.6)	0.912

Figure 1. Proportion of Patients with KCCQ-OS Score ≥ 75

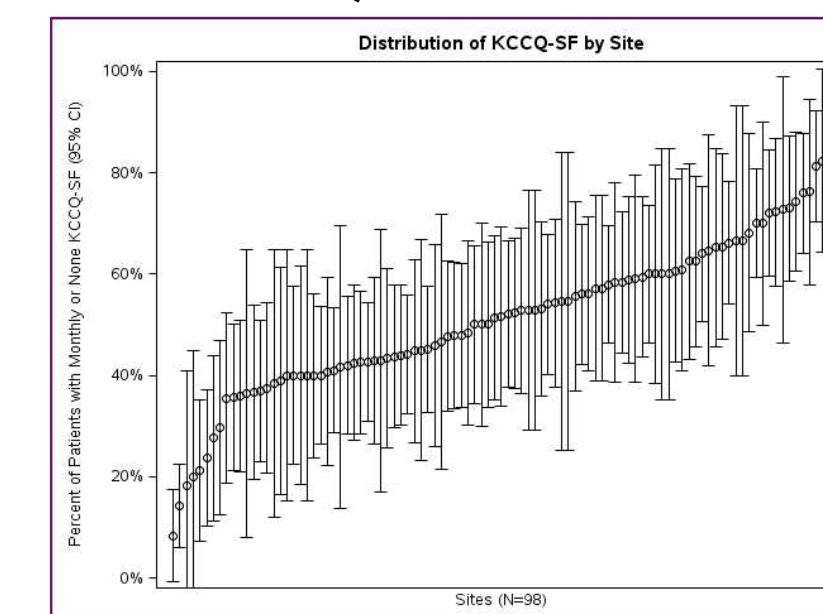


Legend: Each Circle Represents the Percentage of Patients with KCCQ-OS ≥75 for each site, with 95% confidence intervals

Table 2. Mean Difference in KCCQ-SF Scores

Site characteristics	Point Estimate 95% CI	P Value
Physician Specialty (ref: family Practice)		
Internal Medicine	5.4 (-1.0, 11.9)	0.100
HF Specialist	5.4 (-1.0, 11.9)	0.100
Other Cardiologist	5.0 (-0.5, 10.6)	0.074
HF Patients Managed Annually (Num.)	0.5 (-1.0, 1.9)	0.527
Access to Cardiac Rehabilitation	0.8 (-2.4, 4.0)	0.643
Dedicated for Patients with HF	-0.8 (-4.0, 2.3)	0.613
Routine Site Collection of PROs	-0.4 (-3.2, 2.4)	0.759
Suburban	3.3 (0.1, 6.4)	0.043
Rural	1.4 (-2.2, 5.0)	0.457
Patient Telemonitoring Resources	-0.5 (-3.6, 2.5)	0.722

Figure 2. Proportion of Patients with KCCQ-SF Score ≥ 75



Legend: Each Circle Represents the Percentage of Patients with KCCQ-SF ≥75 for each site, with 95% confidence intervals

RESULTS

- ❖ For **KCCQ-OS**, the aMOR was 1.70 (95% CI 1.54, 1.99; p < 0.001) indicating an average 70% (95% CI 54-99%) higher odds of having excellent health status if the same patient were treated at one random site versus another
- ❖ For **KCCQ-SF**, the aMOR was 1.54 (95% CI 1.41, 1.76; p = 0.001) indicating an average 54% (95% CI 41%-76%) higher odds of having minimal-no symptoms if the same patient were treated at one random site versus another
- ❖ Compared to family practice, patients at HF (+6.5 points; 95% CI 0.5, 12.4; p = 0.033) and general cardiology (+6.5 points; 95% CI 1.4, 11.7; p = 0.012) practices had significantly better health status scores; patients enrolled at a suburban setting had better health status compared with those at an urban setting (+3.2; 95% CI 0.2, 6.1; p = 0.034; Table 1)
- ❖ There was a wide range in the proportion of patients with excellent health status (0-77%; Figure 1) and monthly or fewer symptoms (8-82%; Figure 2)

LIMITATIONS

- ❖ CHAMP-HF was conducted in voluntary participating sites committed to clinical research and might therefore not be fully generalizable to the entire country
- ❖ Information on whether patients received care from other providers in regard to their heart failure management, or the duration and frequency of their care, was not recorded

CONCLUSIONS

- ❖ We found substantial site-level variability in patients having excellent health status or monthly-no symptoms
- ❖ Our study findings emphasize the potential of a PRO-based performance measure to incentivize practices to optimize the health status of their HFREF patients in the outpatient setting, which can complement current efforts focusing upon inpatient and early post-discharge outcomes

DISCLOSURES

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