Additional Statistical Analyses for Supplement

We performed a supplemental analysis using 3 EF categories of EF≤35%, EF>35 and <50%, and EF≥50%. Categorical variables were analyzed as frequencies (percentages) using the Chi-Square test. Continuous variables were compared by one-way analysis of variance and presented as mean ± standard deviation if normality assumptions appeared to be reasonable. BNP and nt-ProBNP were log-transformed before analysis. Highly skewed continuous variables were analyzed using non-parametric Kruskal Wallis tests in unadjusted analyses. Negative binomial regression was used for count data (e.g., hospitalizations). Similar to original analysis, we used ANCOVA to control for potential confounders that may affect physical function and QoL, including sex, BMI, non-white race, and comorbidities. GDS score was not adjusted for comorbidities given collinearity between GDS and clinical depression. Rank transformed ANCOVA was used for group comparisons for highly skewed continuous variables. Similarly, binary variables were adjusted using logistic regression for sex, BMI, non-white race, and comorbidities. In case of significant omnibus test, we conducted Tukey comparisons between EF≤35% and EF≥50% categories, as this comparison was the key interest of this study. Two tailed p value <0.05 was considered significant. All analyses were performed using SAS Enterprise Guide 7.1 (Cary, NC).

Supplemental Table 1: Baseline Characteristics, Comorbidities, and Medications Among ADHF patients by EF Group

Characteristics	EF ≤ 35% (n=86)	EF > 35% and < 50% (n=28)	EF ≥ 50% (n=88)	P-value
Age (years)	71.6 ± 7.5	73.3 ± 8.2	72.0 ± 7.4	0.58
Women	38 (44%)	15 (54%)	56 (64%)	0.036
White	36 (42%)	8 (29%)	53 (60%)	0.005
Black or African American	49 (57%)	18 (64%)	33 (38%)	0.009
Hispanic or Latino ethnicity	2 (2%)	0 (0%)	1 (1%)	0.63
Less than high school education	20 (24%)	7 (25%)	10 (11%)	0.013
Body Mass Index (kg/m^2)	30.5 ± 7.4	31.4 ± 7.9	36.5 ± 9.4*	<0.001
New York Heart Association Class				
- II	15 (17%)	5 (18%)	12 (14%)	
- III	47 (55%)	13 (46%)	45 (51%)	0.84
- IV	16 (19%)	7 (25%)	22 (25%)	
Ejection Fraction (%), median (IQR)	25 (20, 30)	40 (40, 43)	55 (55, 62)	<0.001
Days from initial presentation to baseline assessment, median (IQR)	3.25 (2-4.5)	2.25 (1.5-3)	2.5 (2-4)	0.030
Patients with previous hospitalizations within 6 months	35 (41%)	16 (57%)	38 (43%)	0.31
Patients with previous HF hospitalizations within 6 months	27 (31%)	10 (36%)	18 (20%)	0.15
All-cause hospitalizations in last 6 months, total (mean ± SD)	60 (0.7 ± 1.0)	32 (1.1 ± 1.2)	77 (0.9 ± 1.3)	0.26
HF hospitalizations in last 6 months, total (mean ± SD)	41 (0.5 ± 0.8)	15 (0.5 ± 0.8)	29 (0.3 ± 0.8)	0.36
Non-HF hospitalizations in last 6 months, total (mean ± SD)	19 (0.2 ± 0.6)	17 (0.6 ± 0.9)	48 (0.5 ± 0.9)	0.007
B-type natriuretic peptide (pg/mL) (n=117)	1452 ± 1172	862 ± 762	529 ± 541*	<0.001
N-terminal brain natriuretic peptide (n=77)	8630 ± 13403	4611 ± 4277	2824 ± 3370*	0.002
Live Alone	29 (34%)	9 (32%)	28 (32%)	0.96
Current smoking	10 (12%)	4 (14%)	9 (10%)	0.84
Alcohol Abuse	6 (7%)	2 (7%)	2 (2%)	0.30
Comorbidities				
Diabetes mellitus	43 (50%)	16 (57%)	52 (59%)	0.47
Hypertension	77 (90%)	27 (96%)	83 (94%)	0.34
Hyperlipidemia	60 (70%)	20 (71%)	60 (68%)	0.94
Atrial Fibrillation	37 (43%)	12 (43%)	44 (50%)	0.61
Coronary artery disease (previous MI, PCI, or CABG)	37 (43%)	8 (29%)	28 (32%)	0.20
Chronic obstructive pulmonary disease	26 (30%)	6 (21%)	33 (38%)	0.25
Chronic kidney disease	28 (33%)	8 (29%)	31 (35%)	0.80
Stroke	11 (13%)	4 (14%)	17 (20%)	0.49
Arthritis / Connective Tissue Disease	32 (37%)	10 (35%)	52 (60%)	0.007
Cancer	21 (24%)	4 (14%)	17 (19%)	0.47
Depression	9 (10%)	7 (25%)	17 (19%)	0.12
Anemia (by Hgb)	60 (70%)	23 (82%)	61 (70%)	0.39
Peripheral vascular disease	9 (10%)	4 (14%)	13 (15%)	0.68
Peptic ulcer disease	2 (2%)	2 (7%)	5 (6%)	0.43
Dementia	1 (1%)	0 (0%)	3 (3%)	0.41
Obstructive sleep apnea	18 (21%)	5 (18%)	38 (43%)	0.002
AIDS/HIV	2 (2%)	0 (0%)	0 (0%)	0.26
Total number of comorbidities	5.8 ± 1.8	5.9 ± 2.3	6.5 ± 2.2	0.08
Current Medications				
Loop diuretics	81 (95%)	26 (93%)	81 (93%)	0.95
Beta Blockers	78 (91%)	27 (97%)	63 (72%)	<0.001
Angiotensin Converting Enzymes Inhibitors	41 (48%)	15 (54%)	28 (32%)	0.047
Angiotensin receptor blockers	20 (23%)	4 (14%)	20 (23%)	0.58
Calcium channel blockers	12 (14%)	6 (21%)	42 (48%)	<0.001

Values presented as N (%) or mean ± standard deviation unless otherwise indicated. Anemia was defined as Hgb <12g/dl for women or <13g/dl for men. *Abbreviations: HIV/AIDS – human immunodeficiency virus/acquired immunodeficiency syndrome, IQR – interquartile range.*
*Indicates significantly different from EF≤35% group.

Supplemental Table 2: Unadjusted differences in physical function and quality of life amongst elderly ADHF patients by Heart Failure Phenotype

	EF ≤ 35% (n=86)	EF > 35% and < 50% (n=28)	EF ≥ 50% (n=88)	P-value
SPPB Total Score	6.6 ± 2.5	6.0 ± 2.8	5.5 ± 2.4*	0.015
Balance Score	2.9 ± 1.3	2.6 ± 1.3	2.5 ± 1.3	0.17
4-meter Walk Score	2.5 ± 0.9	2.4 ± 1.0	2.0 ± 1.0*	0.002
Chair Stand Score	1.2 ± 1.1	1.1 ± 1.1	1.0 ± 1.0	0.36
6 Minute Walk Distance (m)	205 ± 97	191 ± 87	162 ± 102*	0.016
Gait speed (m/s)	0.65 ± 0.22	0.61 ± 0.23	0.56 ± 0.21*	0.023
Handgrip strength (kg)				
Men	29.2	26.3	26.3	0.34
Women	18.6	19.1	18.8	0.98
Frailty Phenotype				
Frail (≥ 3 of 5 domains met)	44 (51%)	11 (39%)	52 (59%)	0.17
Disease-Specific Quality of Life				
KCCQ Overall Score	44 ± 20	47 ± 24	36 ± 19*	0.005
KCCQ Physical Limitation Score	53 ± 23	51 ± 26	41 ± 22*	0.002
Non-Specific Quality of Life				
Short Form-12 PCS	29 ± 9	29 ± 10	26 ± 8	0.08
Short Form-12 MCS	46 ± 14	46 ± 16	41 ± 13	0.07
EQ-5D-5L Components				
Walking	2.2 ± 1.0	2.5 ± 1.0	2.8 ± 0.9*	<0.001
Self-Care	1.5 ± 0.8	1.7 ± 0.9	2.0 ± 1.0*	0.005
Usual Activities	2.5 ± 1.2	2.4 ± 1.1	2.9 ± 0.9	0.06
Pain/Discomfort	2.4 ± 1.1	2.1 ± 0.8	2.5 ±1.2	0.37
Depression/Anxiety	1.7 ± 1.0	1.5 ± 0.7	2.0 ±1.0	0.049
Visual Analog Scale (0-100)	59 ± 23	69 ± 17	52 ± 23	0.002
Depression				
Geriatric Depression Scale Score	4.5 ± 3.4	4.3 ± 3.8	5.4 ± 3.4	0.10
Geriatric Depression Scale ≥5	38 (44%)	11 (39%)	44 (50%)	0.55
Cognitive Function				
MoCA Score	20.6 ± 5.1	22.3 ± 4.4	21.5 ± 4.1	0.48
MoCA Score <26	70 (81%)	21 (75%)	67 (76%)	0.64

Values presented as N (%) or mean ± standard deviation. For KCCQ, SF-12 and Visual Analog Scale, higher score indicates better health status; for EQ-5D-5L components higher score indicates worse health status. *Abbreviations: KCCQ – Kansas City Cardiomyopathy Questionnaire, PCS – physical composite score, MCS – mental composite score, EQ-5D-5L – EuroQol, MoCA – Montreal Cognitive Assessment.*
*Indicates significantly different from EF≤35% group

Supplemental Table 3: Adjusted differences in physical function, quality of life and depression in elders hospitalized with ADHF by EF Group

	EF ≤ 35% (n=86)	EF > 35% and < 50% (n=28)	EF ≥ 50% (n=88)	P-value
Physical Function				
SPPB Total Score	6.4 ± 0.3	5.9 ± 0.5	5.7 ± 0.3	0.16
Balance Score	2.8 ± 0.1	2.5 ± 0.2	2.6 ± 0.1	0.41
4-meter Walk Score	2.5 ± 0.1	2.3 ± 0.2	2.1 ± 0.1[†]	0.042
Chair Stand Score	1.1 ± 0.1	1.0 ± 0.2	1.0 ± 0.1	0.42
6 minute walk distance (m)	199 ± 10	191 ± 18	168 ± 11	0.11
Gait speed (m/s)	0.64 ± 0.02	0.60 ± 0.04	0.58 ± 0.02	0.21
Handgrip strength (kg)				
Men	28.5 ± 1.4	25.5 ± 2.6	27.6 ± 1.8	0.58
Women	18.7 ± 1.2	18.4 ± 1.8	18.9 ± 1.0	0.97
Frailty Phenotype				
Frail (≥ 3 of 5 domains met)	55% (44-66%)	42% (24-61%)	55% (43-66%)	0.46
Disease-Specific Quality of Life				
KCCQ Overall Score	44 ± 2	46 ± 4	36 ± 2[†]	0.023
KCCQ Physical Limitation Score	53 ± 3	51 ± 4	41 ± 3[†]	0.005
Non-Specific Quality of Life				
Short Form-12 PCS	29 ± 1	29 ± 2	26 ± 1	0.13
Short Form-12 MCS	46 ± 2	46 ± 3	41 ± 2	0.13
EQ-5D-5I Components				
Walking	2.3 ± 0.1	2.5 ± 0.2	2.7 ± 0.1[†]	0.005
Self-Care	1.5 ± 0.1	1.7 ± 0.2	1.9 ± 0.1[†]	0.009
Usual Activities	2.5 ± 0.1	2.5 ± 0.2	2.8 ± 0.1	0.26
Pain/Discomfort	2.4 ± 0.1	2.1 ± 0.2	2.7 ± 0.1	0.27
Depression/Anxiety	1.8 ± 0.1	1.5 ± 0.2	2.0 ± 0.1	0.12
Visual Analog Scale (0-100)	58.5 ± 2.4	67.4 ± 4.2	52.8 ± 2.4	0.012
Depression				
GDS Score*	4.5 ± 0.4	4.4 ± 0.7	5.3 ± 0.4	0.44
Geriatric Depression Scale ≥5*	46% (35-57%)	42% (25-61%)	47% (36-58%)	0.90
Cognitive Function				
MoCA Score	21.3 ± 0.5	22.6 ± 0.8	21.9 ± 0.5	0.38
MoCA Score <26	81% (71-89%)	72% (52-86%)	79% (69-87%)	0.62

Values shown as mean ± standard error or percent (95% CI), adjusted for sex, race, BMI and total number of comorbidities. For KCCQ, SF-12 and Visual Analog Scale, higher score indicates better health status; for EQ-5D components higher score indicates worse health status. *Abbreviations: KCCQ – Kansas City Cardiomyopathy Questionnaire, PCS – physical composite score, MCS – mental composite score, EQ-5D-5L – EuroQol, MoCA – Montreal Cognitive Assessment.*
*Adjusted for sex, race and BMI only.
[†]Indicates significantly different from EF≤35% group.