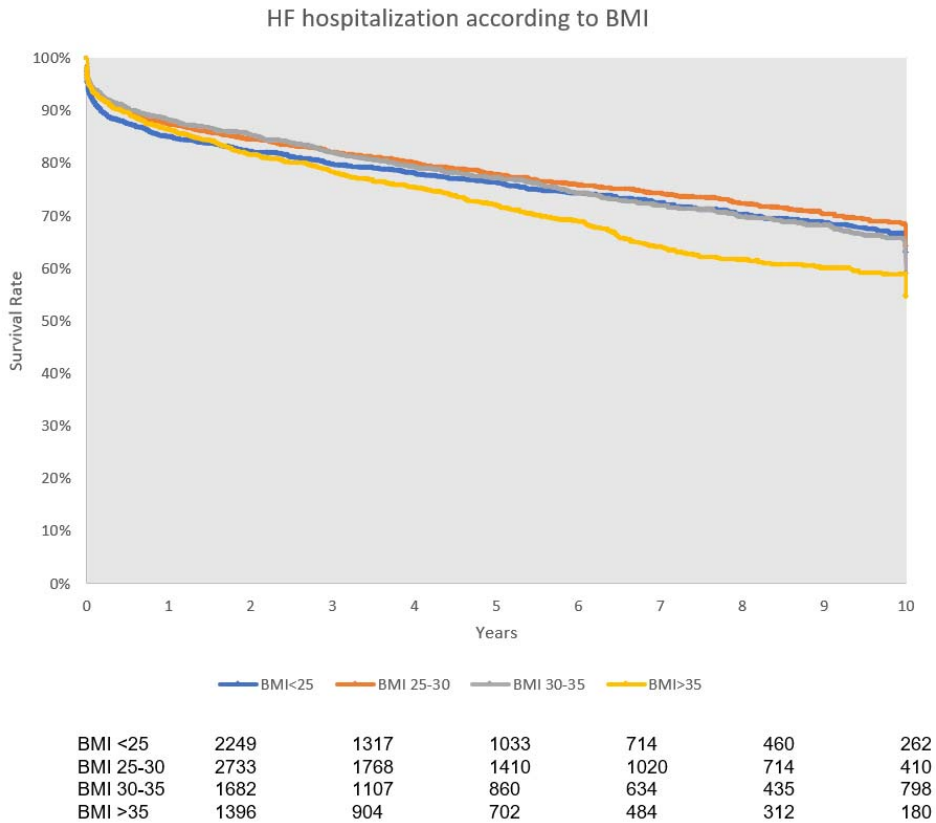
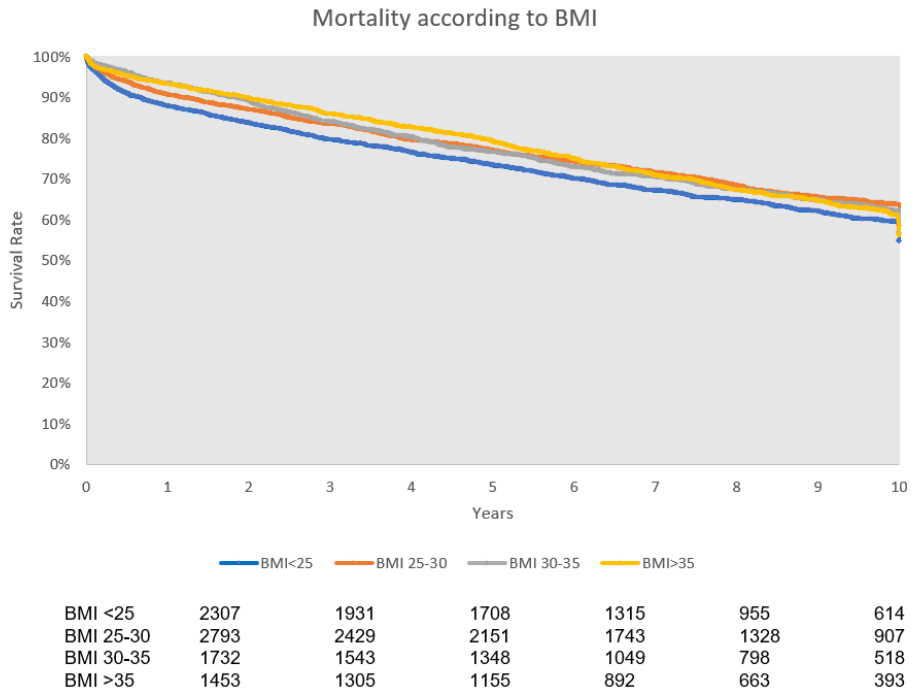


Obesity Modifies Clinical Outcomes of Right Ventricular Dysfunction

SUPPLEMENTAL MATERIAL

Figure S1. Kaplan-Meier survival and heart failure (HF) hospitalization curves across obesity classes



Kaplan-Meier survival curves displaying data for all-cause mortality and heart failure hospitalization, with follow-up duration of 10 years after right heart catheterization.

Table S1. Associations between adverse outcomes and indices of RV function, with effect sizes scaled to per 1-log-unit change

Predictors	Multivariable Adjusted		
	HR	95% CI	p value
All-Cause Mortality			
PAPi	0.87	0.80-0.95	0.001
RA:PCWP ratio	1.15	1.03-1.28	0.01
RVSWI	1.13	1.03-1.23	0.01
HF Hospitalization			
PAPi	0.73	0.66-0.80	<0.001
RA:PCWP ratio	1.26	1.12-1.40	<0.001
RVSWI	0.78	0.68-0.88	<0.001

Abbreviations: HR, hazard ratio; HF, heart failure; PAPi, pulmonary artery pulsatility index; RA:PCWP, right atrium: pulmonary capillary wedge pressure; RV, right ventricle/ventricular; RVSWI, right ventricular stroke work index.

Table S2. Cross-sectional association with BMI and RV function stratified by prevalent HF

Predictors	No prevalent HF (n=5629)			Prevalent HF (n=2656)		
	β estimate	Standard error	p value	β estimate	Standard error	p value
<i>PAPi</i>						
BMI	-0.27	0.01	<0.001	-0.24	0.02	<0.001
<i>RA:PCWP ratio</i>						
BMI	0.26	0.01	<0.001	0.25	0.02	<0.001
<i>RVSWI</i>						
BMI	0.03	0.02	0.03	-0.003	0.02	0.89

Abbreviations: BMI, body mass index; HF, heart failure; PAPi, pulmonary artery pulsatility index; RA:PCWP, right atrium: pulmonary capillary wedge pressure; RV, right ventricle/ventricular; RVSWI, right ventricular stroke work index.

Table S3. Cross-sectional association with BMI and RV function stratified by prevalent PH

Predictors	No Prevalent PH (n=3077)			Prevalent PH (n=5208)		
	β estimate	Standard error	p value	β estimate	Standard error	p value
<i>PAPi</i>						
BMI	-0.25	0.02	<0.001	-0.23	0.01	<0.001
<i>RA:PCWP ratio</i>						
BMI	0.28	0.02	<0.001	0.24	0.01	<0.001
<i>RVSWI</i>						
BMI	-0.08	0.02	<0.001	-0.04	0.01	0.004

Abbreviations: BMI, body mass index; HF, heart failure; PAPi, pulmonary artery pulsatility index; PH, pulmonary hypertension; RA:PCWP, right atrium: pulmonary capillary wedge pressure; RV, right ventricle/ventricular; RVSWI, right ventricular stroke work index.

Table S4. Associations of BMI and obesity classes with indices of RV function stratified by EF

Predictors	HFrEF				HFpEF			
	β estimate	Standard error	p value	p-trend	β estimate	Standard error	p value	p-trend
<i>PAPi</i>								
BMI	-0.26	0.03	<0.001	N/A	-0.17	0.03	<0.001	N/A
Obesity Class								
Normal	REF				REF			
Overweight	-0.24	0.06	<0.001	0.008	-0.20	0.09	0.02	0.06
Class 1	-0.51	0.08	<0.001		-0.48	0.09	<0.001	
Class 2+3	-0.69	0.08	<0.001		-0.56	0.10	<0.001	
<i>RA:PCWP ratio</i>								
BMI	0.27	0.03	<0.001	N/A	0.18	0.03	<0.001	N/A
Obesity Class								
Normal	REF				REF			
Overweight	0.32	0.07	<0.001	<0.001	0.25	0.09	0.006	
Class 1	0.57	0.08	<0.001		0.48	0.10	<0.001	0.02
Class 2+3	0.68	0.09	<0.001		0.57	0.11	<0.001	
<i>RVSWI</i>								
BMI	-0.04	0.03	0.24	N/A	-0.06	0.04	0.09	N/A
Obesity Class								
Normal	REF			0.72	REF			0.66
Overweight	-0.02	0.07	0.77		0.03	0.10	0.78	
Class 1	-0.10	0.08	0.23		-0.17	0.10	0.11	
Class 2+3	-0.12	0.09	0.20		-0.22	0.11	0.05	

Abbreviations: BMI, body mass index; EF, ejection fraction; HFpEF, heart failure with preserved ejection fraction; HFrEF, heart failure with reduced ejection fraction; PAPi, pulmonary artery pulsatility index; RA:PCWP, right atrium: pulmonary capillary wedge pressure; RV, right ventricle/ventricular; RVSWI, right ventricular stroke work index.

Table S5. Associations between adverse outcomes and RV function stratified by EF

Predictors	HFrEF				HFpEF			
	Event/ total	HR	95% CI	p value	Event/ total	HR	95% CI	p value
All-Cause Mortality								
PAPi	685/1242	0.83	0.73-0.95	0.007	431/820	0.93	0.78-1.12	0.45
RA:PCWP ratio	685/1242	1.20	1.05-1.37	0.008	431/820	1.01	0.85-1.20	0.92
RVSWI	622/1134	1.12	1.01-1.23	0.03	374/729	0.99	0.99-1.12	0.88
HF Hospitalization								
PAPi	643/1230	0.83	0.74-0.92	<0.001	272/816	0.93	0.78-1.12	0.46
RA:PCWP ratio	643/1230	1.15	1.03-1.28	0.01	272/816	1.13	1.01-1.27	0.04
RVSWI	580/1122	0.87	0.78-0.97	0.01	244/727	1.10	0.92-1.32	0.03

Abbreviations: EF, ejection fraction; HR, hazard ratio; HF, heart failure; HFpEF, heart failure with preserved ejection fraction; HFrEF, heart failure with reduced ejection fraction; PAPi, pulmonary artery pulsatility index; RA:PCWP, right atrium: pulmonary capillary wedge pressure; RV, right ventricle/ventricular; RVSWI, right ventricular stroke work index

Table S6. Associations of BMI and obesity classes with indices of RV function stratified by PH subtype

Predictors	Precapillary PH			Postcapillary PH			Mixed PH		
	β estimate	Standard error	p value	β estimate	Standard error	p value	β estimate	Standard error	p value
PAPi									
BMI	-0.20	0.04	<0.001	-0.17	0.02	<0.001	-0.14	0.03	<0.001
Obesity Class									
Normal	REF			REF					
Overweight	-0.20	0.10	0.04	-0.16	0.05	<0.001	-0.25	0.07	<0.001
Class 1	-0.32	0.12	0.006	-0.41	0.05	<0.001	-0.37	0.08	<0.001
Class 2+3	-0.56	0.14	<0.001	-0.52	0.05	<0.001	-0.39	0.09	<0.001
RA:PCWP ratio									
BMI	0.24	0.05	<0.001	0.18	0.02	<0.001	0.17	0.03	<0.001
Obesity Class									
Normal	REF			REF			REF		
Overweight	0.20	0.10	0.06	0.19	0.05	<0.001	0.26	0.07	<0.001
Class 1	0.40	0.13	0.002	0.42	0.05	<0.001	0.38	0.08	<0.001
Class 2+3	0.65	0.15	<0.001	0.55	0.05	<0.001	0.46	0.08	<0.001
RVSWI									
BMI	-0.04	0.04	0.27	0.00	0.02	0.91	0.08	0.04	0.02
Obesity Class									
Normal	REF			REF					
Overweight	-0.14	0.09	0.13	0.10	0.06	0.08	0.00	0.09	0.97
Class 1	0.00	0.11	0.98	0.02	0.06	0.72	0.10	0.10	0.30
Class 2+3	-0.17	0.13	0.22	0.02	0.06	0.76	0.18	0.11	0.09

Abbreviations: BMI, body mass index; PAPi, pulmonary artery pulsatility index; PH, pulmonary hypertension; RA:PCWP, right atrium: pulmonary capillary wedge pressure; RV, right ventricle/ventricular; RVSWI, right ventricular stroke work index.

Table S7. Associations between adverse outcomes and RV function stratified by PH subtype

Predictors	Event/ total	Precapillary PH			Postcapillary PH				Mixed PH			p- value
		HR	95% CI	p- value	Event/ total	HR	95% CI	p- value	Event/ total	HR	95% CI	
All-Cause Mortality												
PAPi	355/688	1.02	0.88-1.18	0.79	1070/2488	0.73	0.64-0.83	<0.001	489/878	0.71	0.60-0.84	<0.001
RA:PCWP ratio	355/688	1.01	0.89-1.16	0.84	1070/2488	1.40	1.22-1.60	<0.001	489/878	1.49	1.25-1.78	<0.001
RVSWI	333/645	1.31	1.15-1.49	<0.001	954/2236	1.01	0.94-1.08	0.87	450/807	0.93	0.84-1.03	0.15
HF hospitalization												
PAPi	154/669	0.74	0.60-0.91	0.005	872/2436	0.83	0.75-0.93	0.001	391/865	0.71	0.61-0.83	<0.001
RA:PCWP ratio	154/669	1.34	1.09-1.64	0.005	872/2436	1.14	1.01-1.28	0.03	391/865	1.33	1.13-1.57	<0.001
RVSWI	140/627	0.92	0.73-1.17	0.50	778/2193	0.87	0.79-0.96	0.004	356/795	0.71	0.63-0.81	<0.001

Abbreviations: HR, hazard ratio; HF, heart failure; PAPi, pulmonary artery pulsatility index; PH, pulmonary hypertension; RA:PCWP, right atrium: pulmonary capillary wedge pressure; RV, right ventricle/ventricular; RVSWI, right ventricular stroke work index.