

e-Appendix 1.

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e-Table 1. Univariable Associations with Health Outcomes

Outcome	β (95% CI)	p-value
Obesity exposure		
SGRQ Total Score		
Obese class I	2.42 (0.63, 4.21)	0.008
Obese Class II	5.52 (2.97, 8.08)	<0.001
Obese Class III	9.54 (6.27, 12.80)	<0.001
SF-36 T score		
Obese class I	-1.00 (-2.34, 0.35)	0.147
Obese class II	-2.66 (-4.61, -0.71)	0.008
Obese class III	-4.07 (-6.49, -1.66)	0.001
6MWD		
Obese class I	-52.24 (-84.70, -19.78)	0.002
Obese class II	-125.64 (-172.05, -79.23)	<0.001
Obese class III	-305.06 (-364.74, -245.38)	<0.001
	OR (95% CI)	p-value
mMRC \geq 2		
Obese class I	1.19 (1.00, 1.41)	0.053
Obese class II	1.80 (1.37, 2.35)	<0.001
Obese class III	3.42 (2.26, 5.19)	<0.001
Moderate AECOPD		
Obese class I	1.27 (1.00, 1.60)	0.047
Obese class II	1.20 (0.86, 1.68)	0.284
Obese class III	1.06 (0.68, 1.65)	0.806
Severe AECOPD		
Obese class I	1.04 (0.85, 1.27)	0.685
Obese class II	1.17 (0.88, 1.54)	0.276
Obese class III	1.57 (1.13, 2.18)	0.007

Abbreviations: β , beta coefficient; 6MWD, 6-Minute Walk Distance; AECOPD, Acute Exacerbation of COPD; CI, confidence interval; mMRC, modified Medical Research Council; OR, odds ratio; SF-36, Short Form 35; SGRQ, Saint George's Respiratory Questionnaire

e-Table 2. Health Outcome Multivariable Models with Individual Comorbidities

Exposure of Interest	SGRQ Total Score		SF-36 T score		6MWD	
	β (95% CI)	p-value	β (95% CI)	p-value	β (95% CI)	p-value
Obesity						
Obese class I	2.04 (0.54, 3.54)	0.008	-0.76 (-1.96, 0.43)	0.212	-54.57 (-82.57, -26.56)	<0.001
Obese Class II	3.03 (0.84, 5.22)	0.007	-0.86 (-2.66, 0.94)	0.349	-123.17 (-164.08, -82.27)	<0.001
Obese Class III	5.40 (2.57, 8.22)	<0.001	-0.93 (-3.16, 1.31)	0.417	-286.55 (-339.77, -233.34)	<0.001
Allergies	0.74 (-0.65, 2.13)	0.297	-0.94 (-2.07, 0.18)	0.101	5.36 (-20.66, 31.39)	0.686
Asthma	6.60 (5.16, 8.04)	<0.001	-3.27 (-4.43, -2.12)	<0.001	15.31 (-11.60, 42.22)	0.265
Cancer	1.79 (-0.56, 4.15)	0.135	-1.71 (-3.64, 0.23)	0.084	-11.41 (-55.68, 32.85)	0.613
Coronary Heart Disease	1.88 (0.18, 3.58)	0.030	-1.86 (-3.21, -0.52)	0.007	-64.99 (-96.83, -33.14)	<0.001
Congestive Heart Failure	1.44 (-1.23, 4.11)	0.291	-0.11 (-2.20, 1.97)	0.914	-89.18 (-140.19, -38.16)	0.001
CVA / TIA	4.79 (2.29, 7.28)	<0.001	-2.01 (-3.94, -0.09)	0.040	-28.87 (-75.47, 17.73)	0.225
Diabetes mellitus	1.18 (-0.62, 2.99)	0.198	-1.64 (-3.06, -0.21)	0.024	-37.68 (-71.57, -3.79)	0.029
GERD	3.61 (2.27, 4.96)	<0.001	-1.71 (-2.78, -0.63)	0.002	-23.44 (-48.67, 1.79)	0.069
Hypertension	0.82 (-0.44, 2.09)	0.201	0.52 (-0.51, 1.56)	0.319	-17.00 (-40.60, 6.61)	0.158
Hyperlipidemia	-0.15 (-1.44, 1.14)	0.820	-0.56 (-1.60, 0.47)	0.285	32.58 (8.39, 56.77)	0.008
Obstructive Sleep Apnea	5.84 (4.21, 7.47)	<0.001	-2.94 (-4.28, -1.61)	<0.001	-46.39 (-77.00, -15.78)	0.003
Osteoarthritis	1.45 (-0.06, 2.96)	0.060	-0.03 (-1.23, 1.17)	0.965	-29.00 (-57.22, -0.77)	0.044
Osteoporosis	2.86 (1.24, 4.48)	0.001	-2.66 (-3.99, -1.32)	<0.001	-44.34 (-74.82, -13.87)	0.004
Peptic ulcer disease	1.38 (-0.59, 3.34)	0.171	-1.61 (-3.19, -0.04)	0.045	0.52 (-36.53, 37.57)	0.978
Peripheral arterial disease	0.14 (-3.13, 3.40)	0.935	-1.04 (-3.63, 1.56)	0.435	-82.78 (-143.52, -22.02)	0.008
Rheumatoid arthritis	5.28 (3.19, 7.36)	<0.001	-1.45 (-3.13, 0.23)	0.090	-40.20 (-79.17, -1.24)	0.043
Exposure of Interest	mMRC		Moderate AECOPD		Severe AECOPD	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value

Obesity									
Obese class I	1.22	(0.99, 1.50)	0.058	1.22	(0.95, 1.57)	0.124	1.04	(0.84, 1.29)	0.725
Obese class II	1.67	(1.21, 2.30)	0.002	1.06	(0.73, 1.52)	0.771	1.10	(0.81, 1.50)	0.550
Obese class III	2.92	(1.82, 4.69)	<0.001	0.79	(0.48, 1.28)	0.337	1.42	(0.97, 2.08)	0.069
Allergies	0.91	(0.75, 1.11)	0.349	1.28	(1.2, 1.60)	0.034	1.10	(0.91, 1.34)	0.317
Asthma	1.55	(1.25, 1.92)	<0.001	1.56	(1.24, 1.95)	<0.001	1.72	(1.42, 2.08)	<0.001
Cancer	0.95	(0.69, 1.31)	0.758	0.93	(0.61, 1.41)	0.723	1.25	(0.89, 1.76)	0.193
Coronary Heart Disease	1.42	(1.11, 1.82)	0.005	1.09	(0.82, 1.46)	0.537	1.03	(0.81, 1.32)	0.798
Congestive Heart Failure	1.66	(1.04, 2.66)	0.035	0.92	(0.60, 1.40)	0.699	1.45	(1.02, 2.04)	0.036
CVA / TIA	1.40	(0.98, 2.02)	0.067	1.57	(1.06, 2.32)	0.025	1.52	(1.08, 2.14)	0.017
Diabetes mellitus	1.07	(0.82, 1.40)	0.609	1.42	(1.07, 1.89)	0.016	1.15	(0.89, 1.48)	0.276
GERD	1.39	(1.15, 1.69)	0.001	1.17	(0.93, 1.46)	0.179	1.17	(0.97, 1.42)	0.103
Hypertension	1.12	(0.94, 1.34)	0.199	1.01	(0.81, 1.26)	0.907	0.93	(0.77, 1.11)	0.410
Hyperlipidemia	1.08	(0.90, 1.29)	0.430	0.92	(0.74, 1.14)	0.447	1.03	(0.85, 1.24)	0.750
Obstructive Sleep Apnea	1.56	(1.22, 1.98)	<0.001	1.47	(1.14, 1.91)	0.003	1.11	(0.88, 1.40)	0.370
Osteoarthritis	1.17	(0.94, 1.45)	0.164	0.98	(0.76, 1.26)	0.861	0.82	(0.66, 1.03)	0.090
Osteoporosis	1.40	(1.10, 1.77)	0.006	1.45	(1.12, 1.87)	0.005	1.25	(0.99, 1.57)	0.056
Peptic ulcer disease	1.23	(0.92, 1.64)	0.164	1.12	(0.82, 1.54)	0.471	1.06	(0.80, 1.39)	0.690
Peripheral arterial disease	1.10	(0.68, 1.80)	0.699	0.94	(0.54, 1.20)	0.829	0.90	(0.55, 1.45)	0.652
Rheumatoid arthritis	1.40	(1.03, 1.90)	0.033	0.83	(0.57, 1.20)	0.315	1.34	(1.01, 1.77)	0.042

Adjusted for: age, gender, race, education, FEV₁/Ht², smoking status, and smoking pack-years.

Referent for obesity class: Normal/overweight individuals (BMI 18.5 – 29.9kg/m²)

Abbreviations: β, beta coefficient; 6MWD, 6-Minute Walk Distance; AECOPD, Acute Exacerbation of COPD; CI, confidence interval; CVA, cerebrovascular attack; GERD, gastroesophageal reflux disease; mMRC, modified Medical Research Council; OR, odds ratio; SF-36, Short Form 35; SGRQ, Saint George's Respiratory Questionnaire; TIA, transient ischemic attack