

SUPPLEMENTAL MATERIAL

Figure S1. Association of BMI with Traditional and Corrected Anion Gap.

Differences in baseline traditional (A & C) (n = 94,488) and corrected (B & D) (n = 94,197) anion gap according to WHO BMI groups (A & B) and smaller BMI categories (C & D). Models adjusted for age, sex, race/ethnicity, and baseline income, insurance status, estimated glomerular filtration rate, hypertension, diabetes, and coronary artery disease. Bars denote 95% confidence intervals. #p < 0.01; *p < 0.001.

Figure S2. Association of BMI with Corrected Anion Gap Over Time, Subgroups by Albumin Quartiles.

Association of time-updated BMI with corrected anion gap over time according to WHO BMI groups, among subgroups by baseline albumin quartile.

Model adjusted for age, sex, race/ethnicity, time, and baseline income, insurance status, estimated glomerular filtration rate, hypertension, diabetes, and coronary artery disease. Bars denote 95% confidence intervals. #p < 0.01; *p < 0.001

Figure S3. Association of BMI with Incident Elevated Anion Gap Among Patients Without Hypertension.

Hazard ratios for incident elevated traditional (A) (n = 47,367) and corrected (B) (n = 47,837) anion gap according to WHO BMI groups among patients without hypertension at baseline. Model adjusted for age, sex, race/ethnicity, and baseline income, insurance status, estimated glomerular filtration rate, diabetes, and coronary artery disease. Bars denote 95% confidence interval. #p < 0.01; *p < 0.001

Figure S4. Association of BMI with Incident Elevated Corrected Anion Gap Among Diabetes Subgroups.

Hazard ratios for incident elevated corrected anion gap among patients with (A) (n = 22,945) and without (B) (n = 68,549) diabetes mellitus at baseline, according to WHO BMI groups. Model adjusted for age, sex, race/ethnicity, and

baseline income, insurance status, estimated glomerular filtration rate, hypertension, and coronary artery disease. Bars denote 95% confidence interval. # $p < 0.01$; * $p < 0.001$

Figure S5. Association of BMI with Incident Elevated Anion Gap, Adjusted for

Blood Urea Nitrogen. Hazard ratios for incident elevated traditional (A) ($n = 90,459$)

and corrected (B) ($n = 91,494$) anion gap according to WHO BMI groups. Model

adjusted for age, sex, race/ethnicity, and baseline income, insurance status, estimated

glomerular filtration rate, baseline blood urea nitrogen, hypertension, diabetes, and

coronary artery disease. Bars denote 95% confidence interval. # $p < 0.01$; * $p < 0.001$

Table S1. Association of BMI with Incident Elevated Traditional and Corrected

Anion Gap Among Race/ethnicity Subgroups.

Table S2. Association of BMI with Incident Anion Gap Metabolic Acidosis among

Subgroup without Diabetes

Table S3. Association of BMI with Incident Anion Gap Metabolic Acidosis

(Bicarbonate < 22 mEq/L)

Table S4. Association of BMI with Change in Bicarbonate and Corrected Anion

Gap over Study Period

Figure S1a

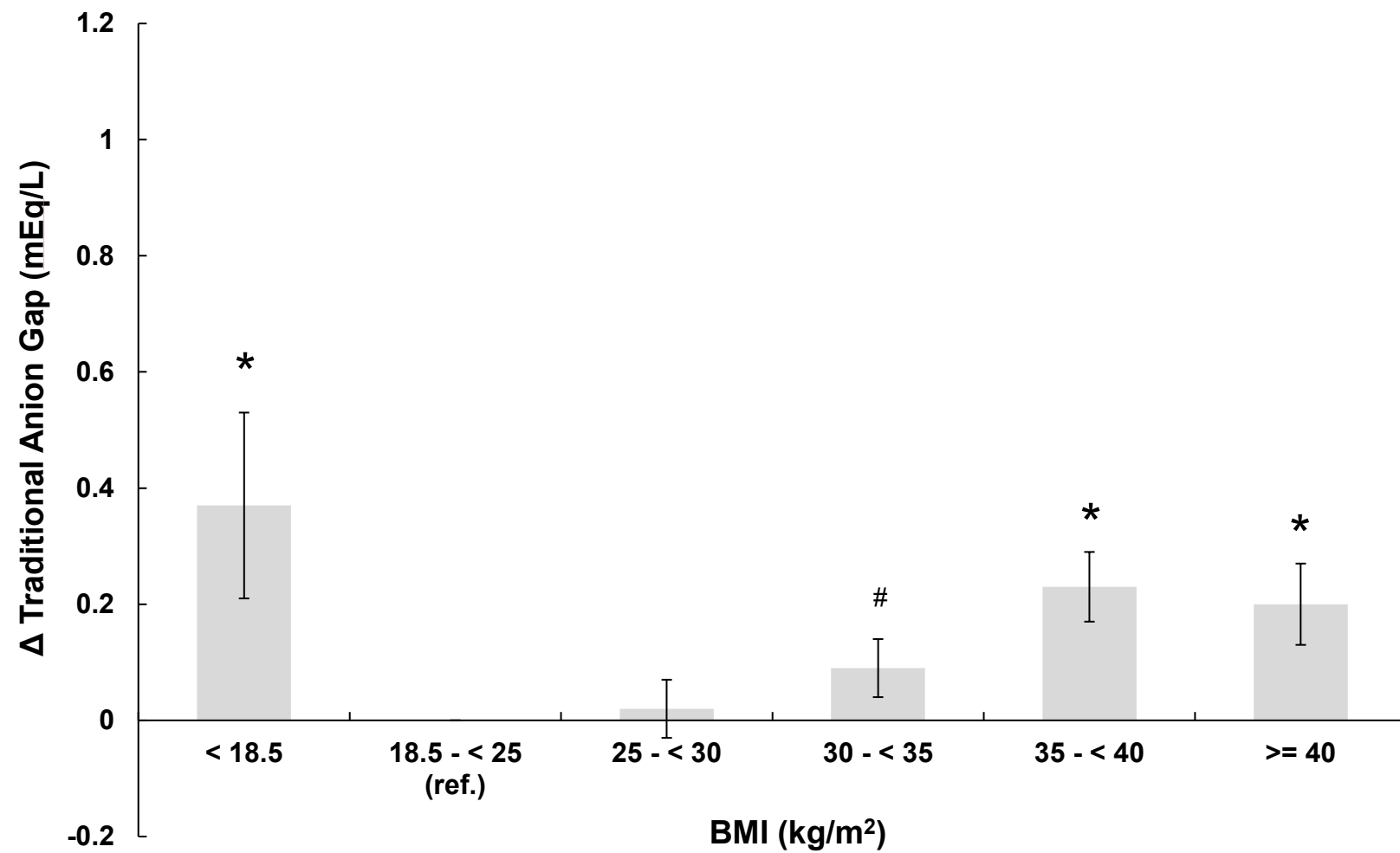


Figure S1b

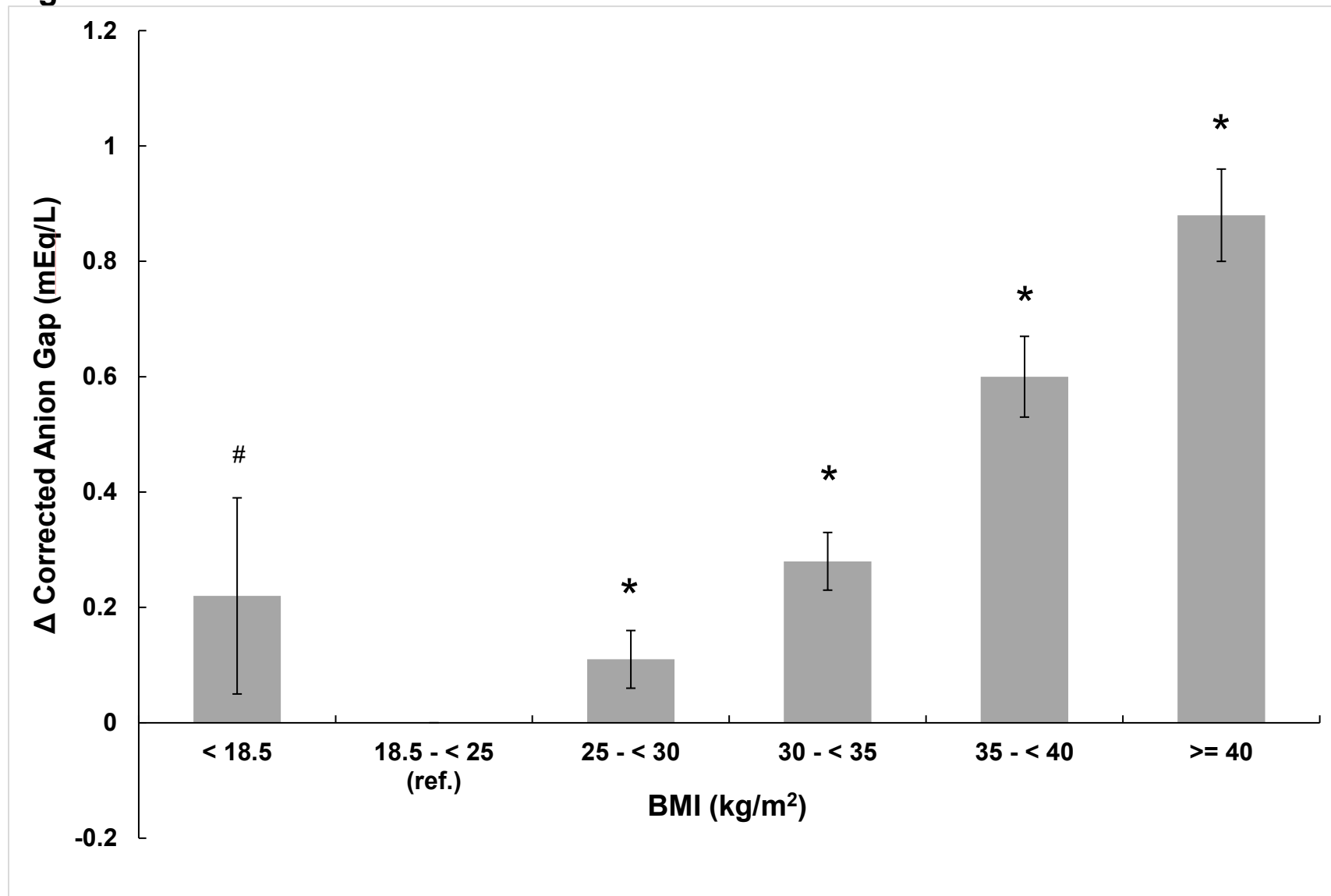


Figure S1c

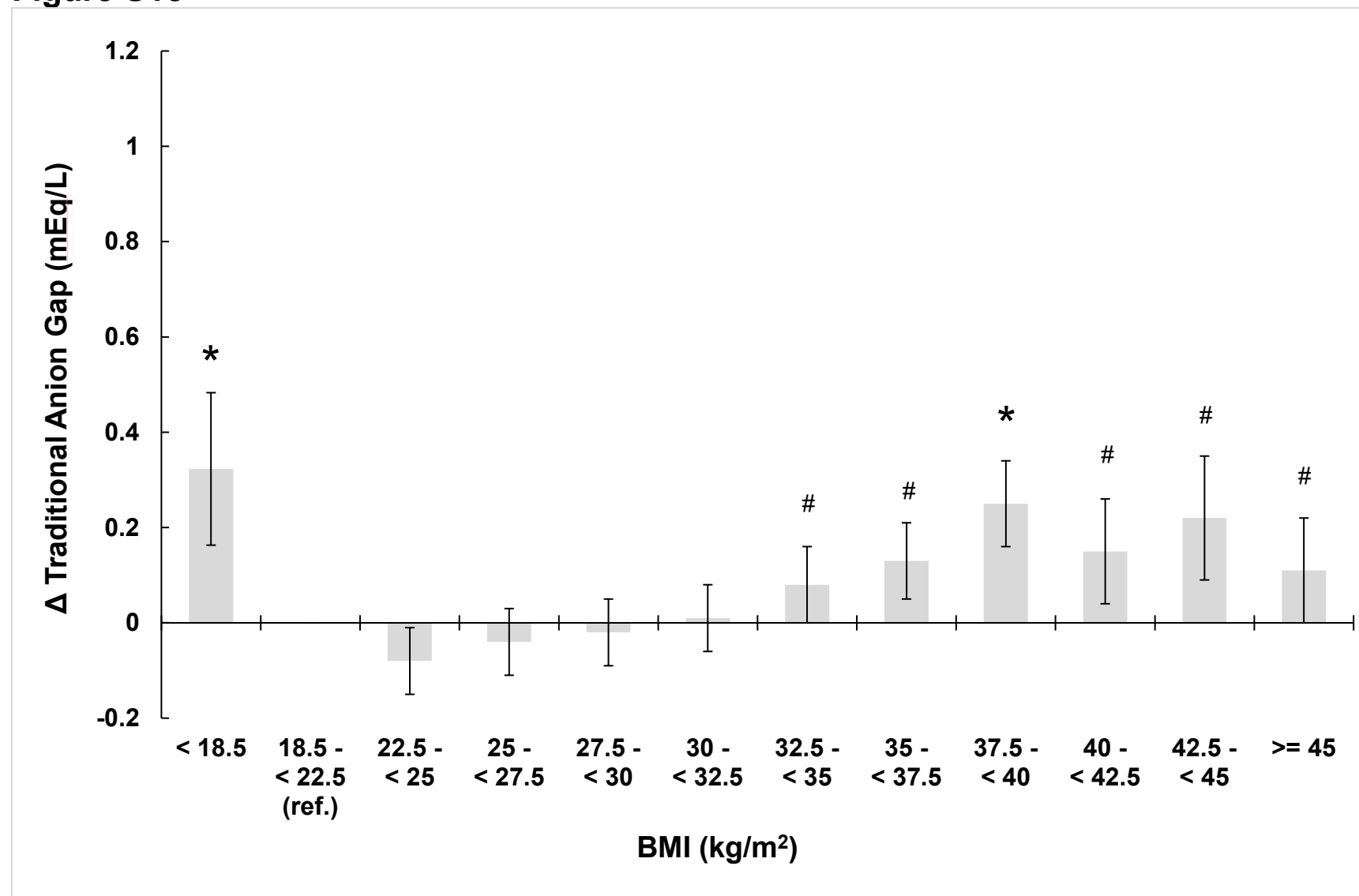


Figure S1d

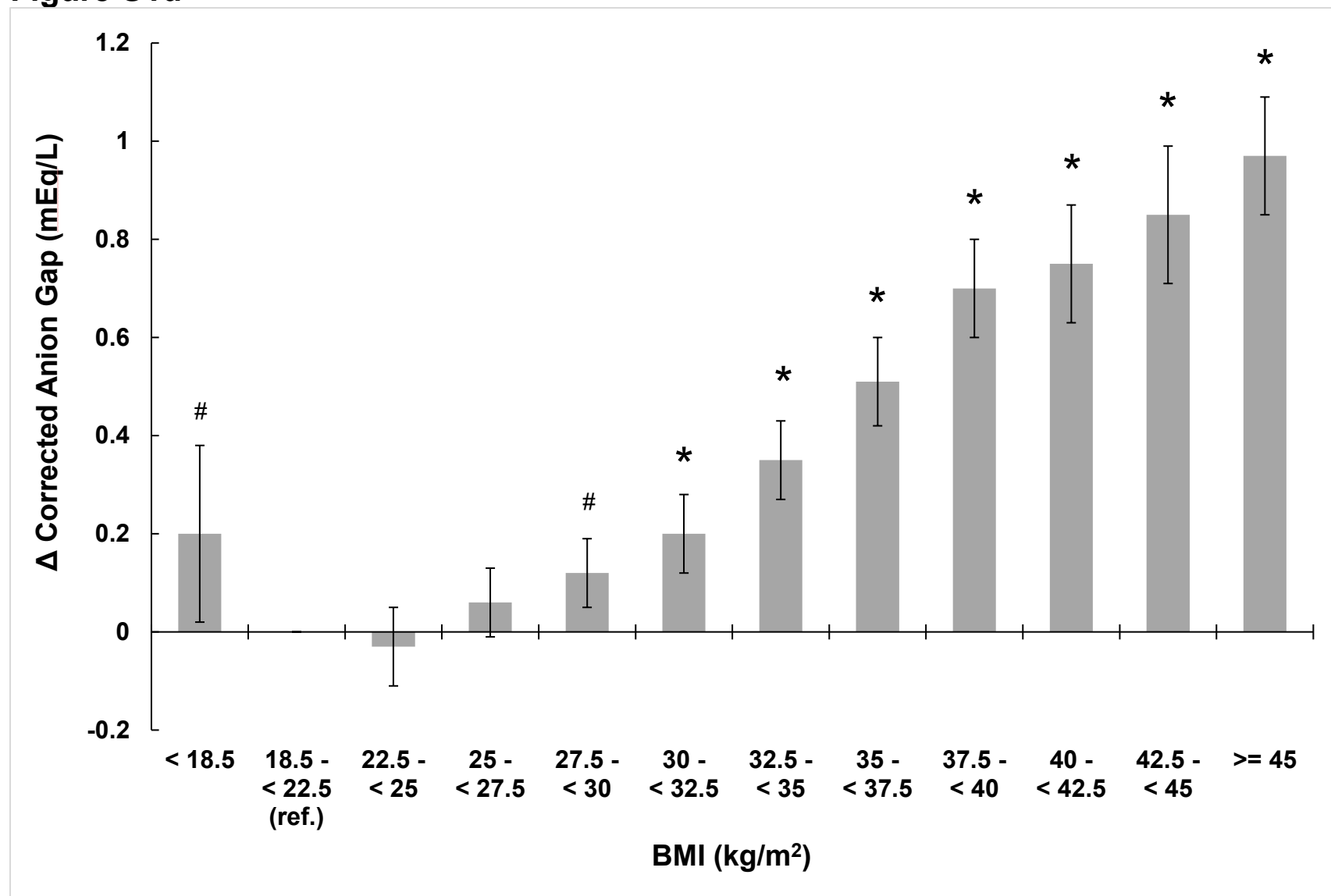


Figure S2

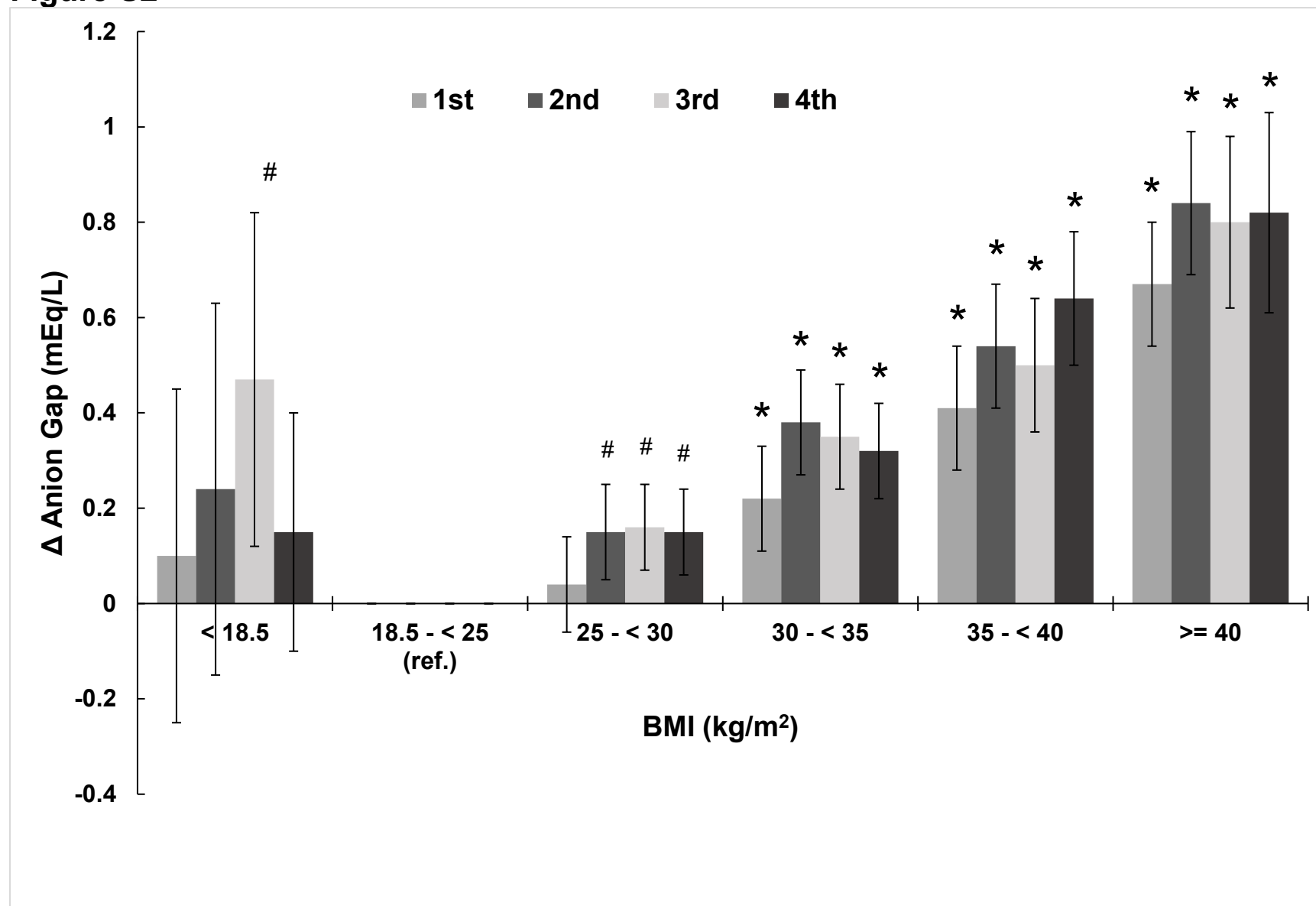


Figure S3a

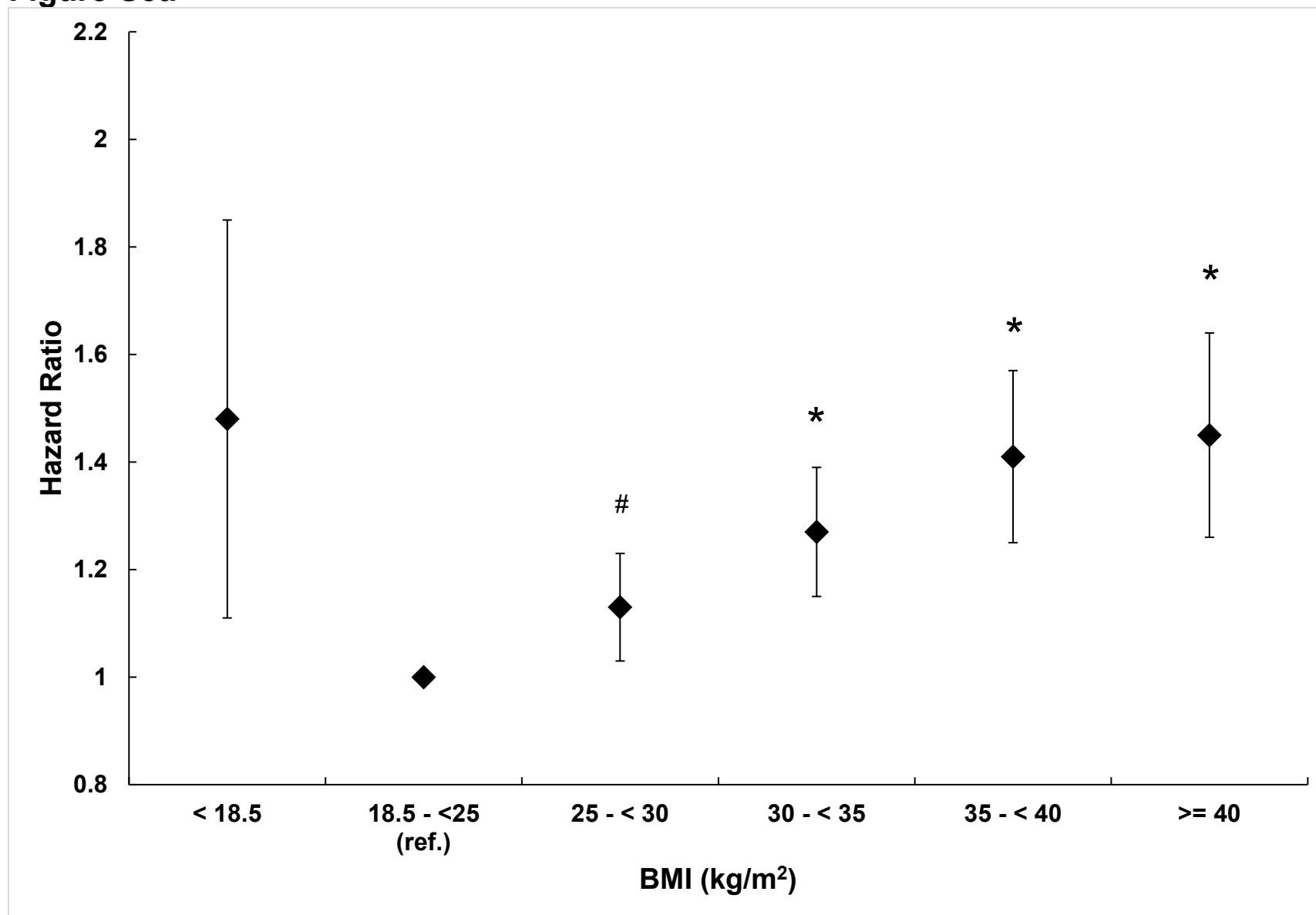


Figure S3b

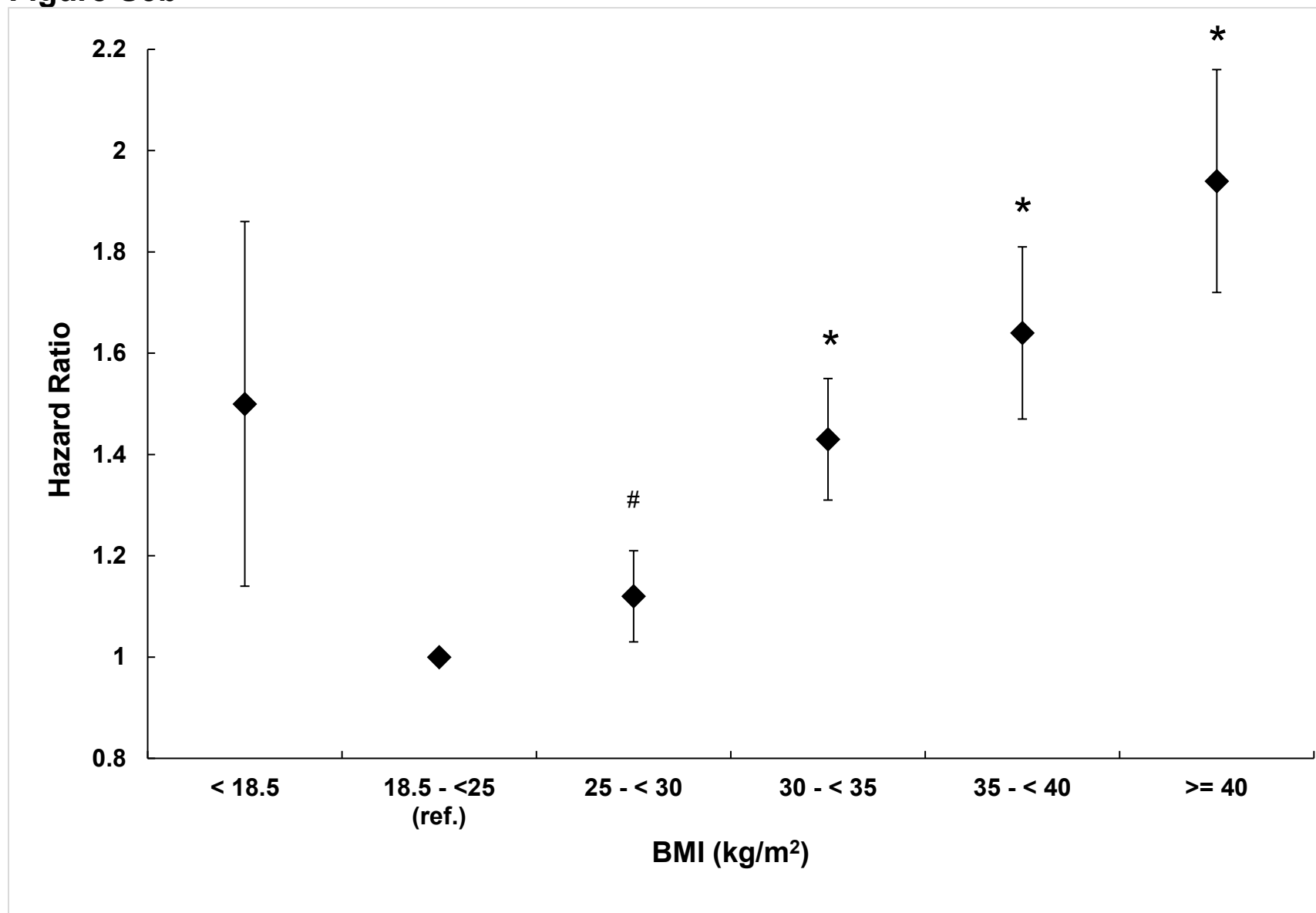


Figure S4a

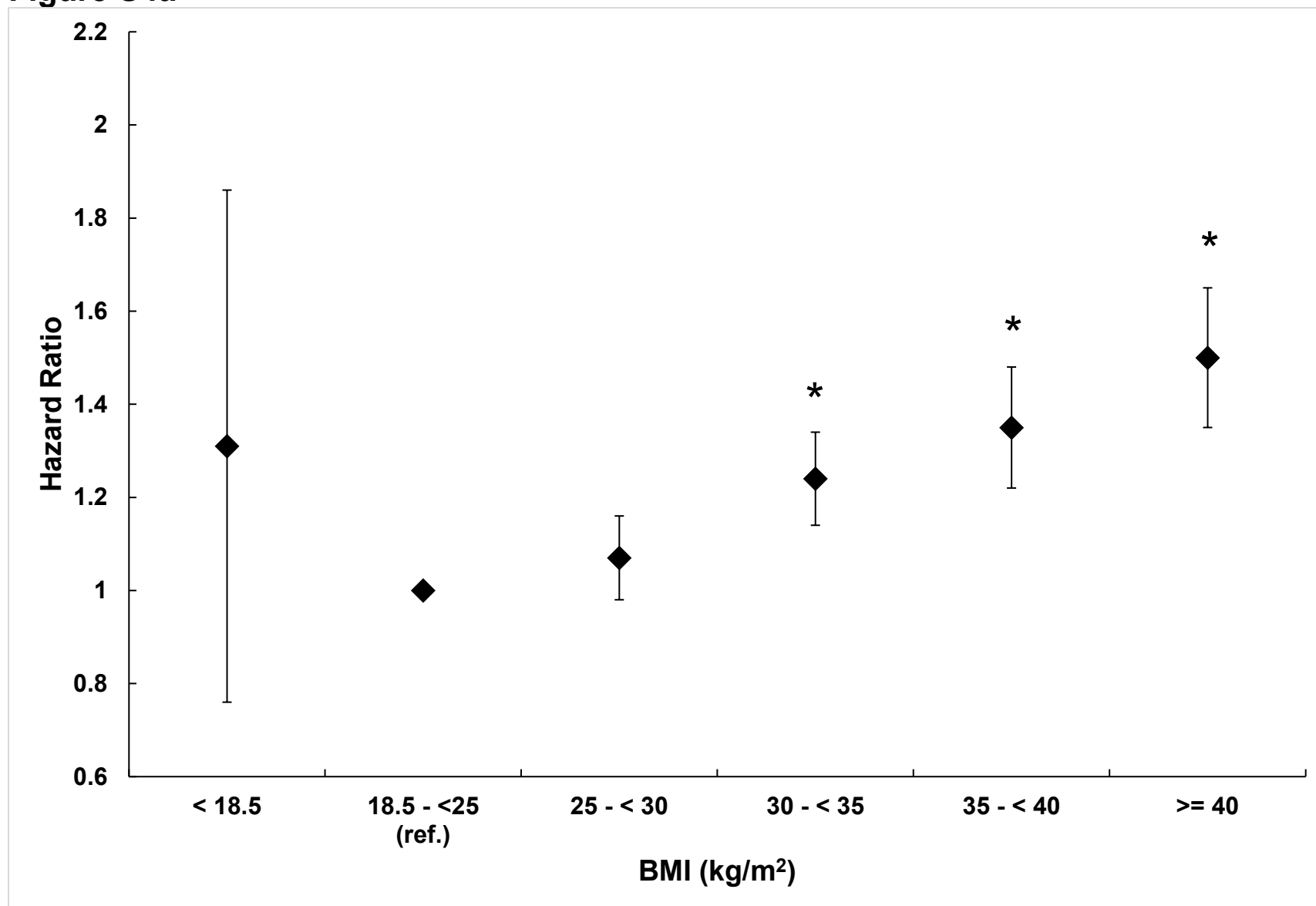


Figure S4b

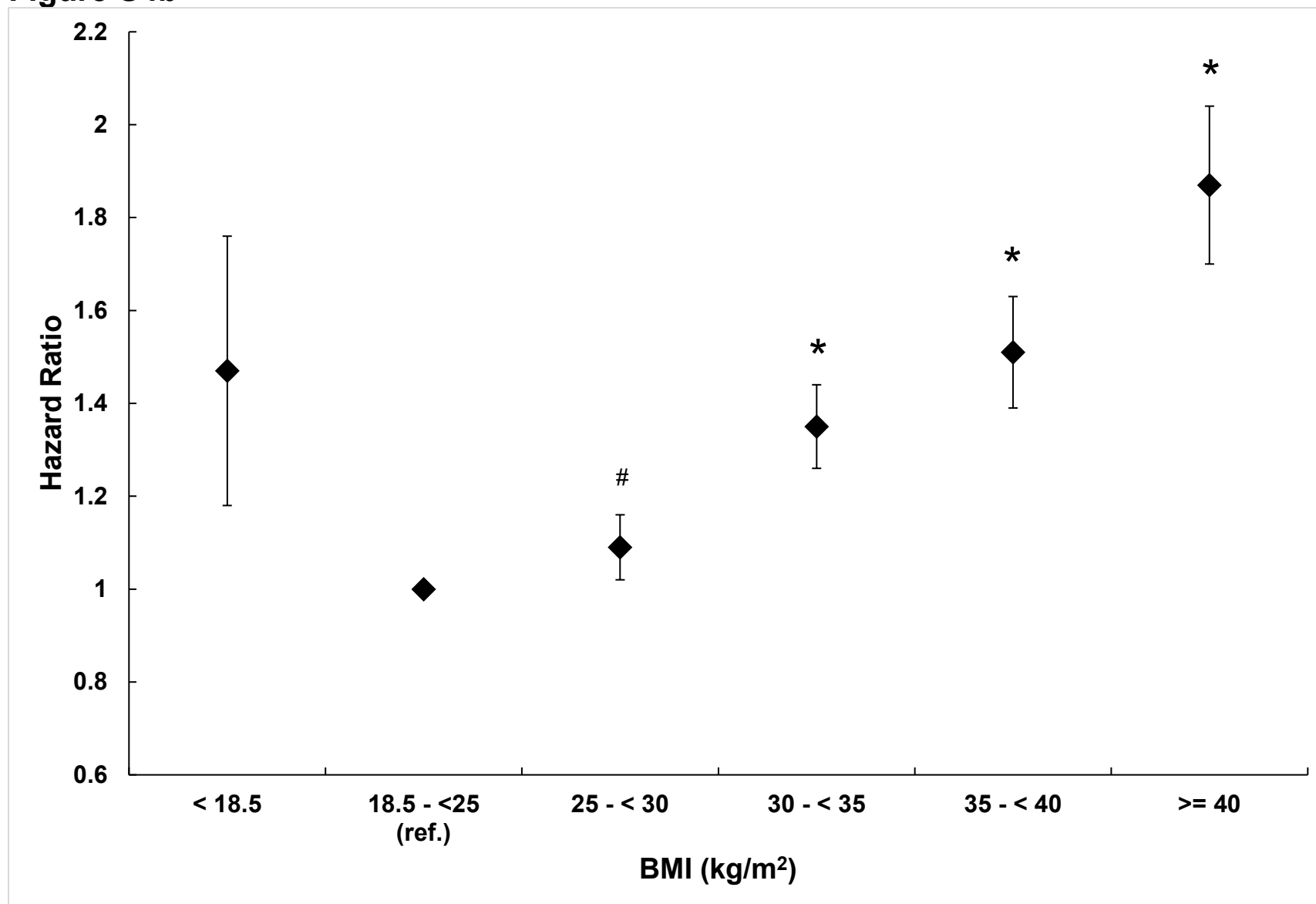
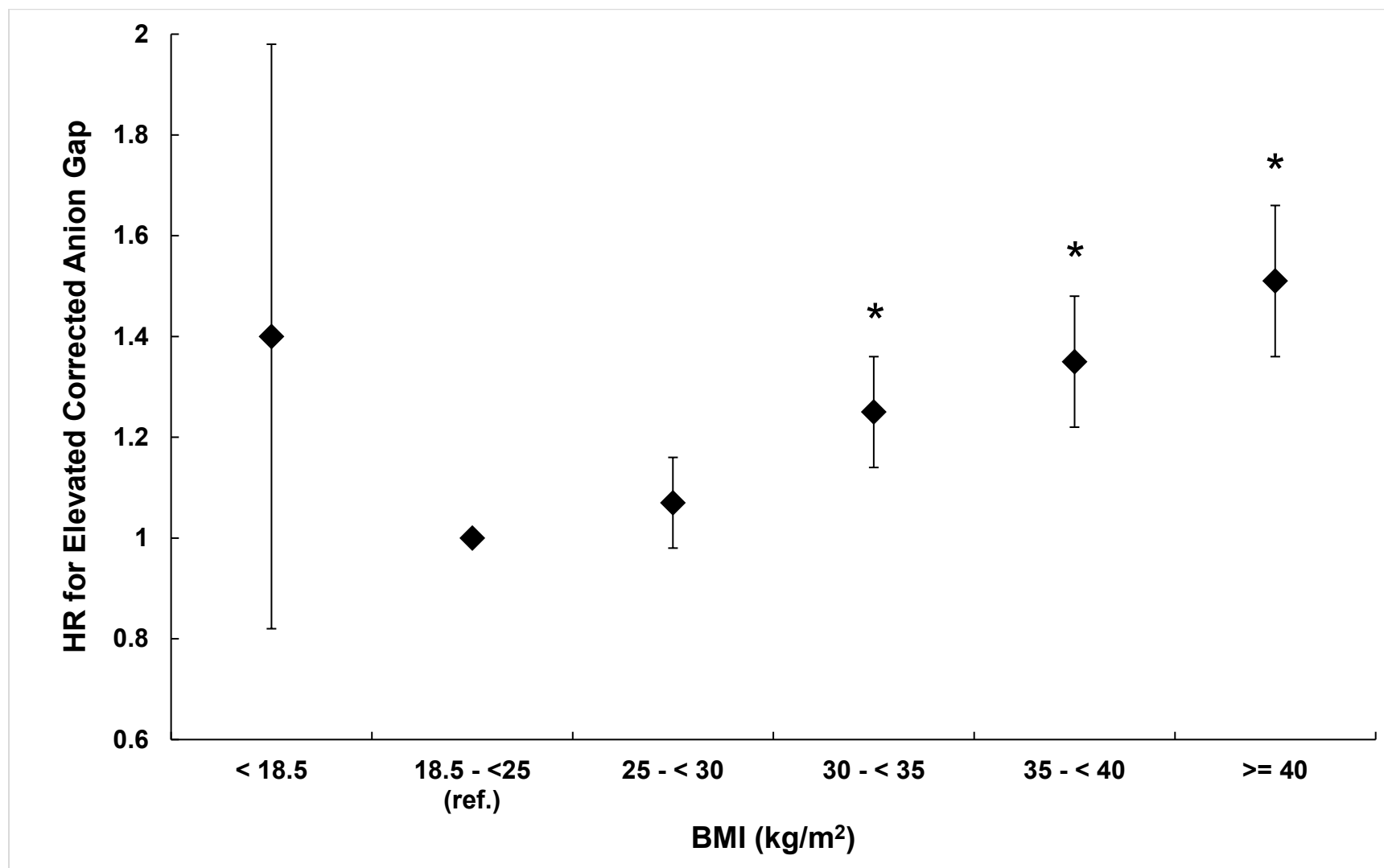


Figure S5a



Figures S5b

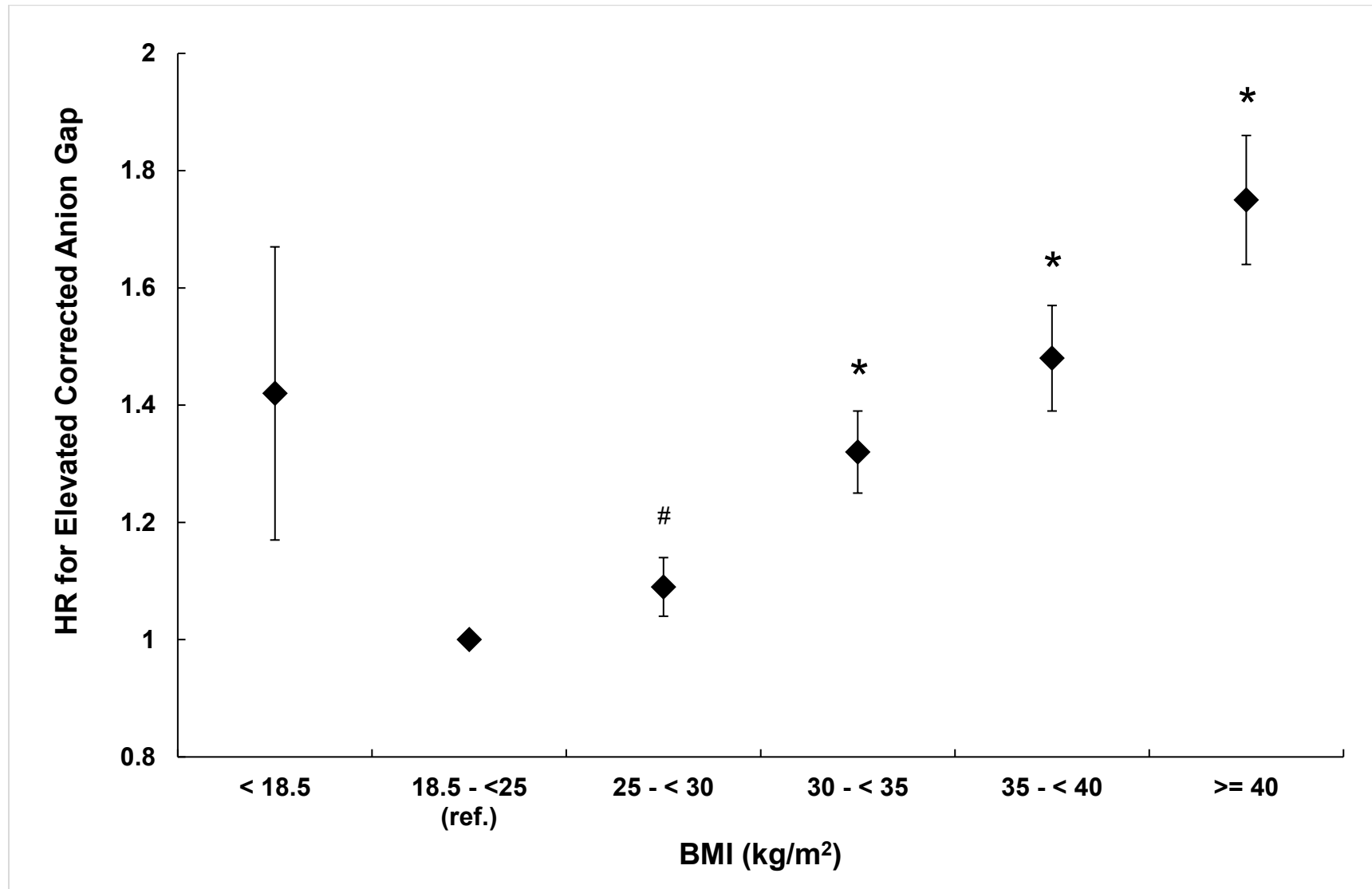


Table S1. Association* of BMI with Incident Elevated Traditional and Corrected Anion Gap Among Race/ethnicity Subgroups

Race/ethnicity	BMI (kg/m ²)	Elevated Traditional Anion Gap		Elevated Corrected Anion Gap	
		Hazard ratio [95% CI]	p value	Hazard ratio [95% CI]	p value
Black (Subgroup size: Traditional, n = 31,137; Corrected, n = 31,344)	< 18.5	1.79 [1.29 - 2.47]	<0.001	1.90 [1.40 - 2.57]	<0.001
	18.5 - < 25	reference	n/a	reference	n/a
	25 - < 30	0.99 [0.90 - 1.08]	0.80	1.03 [0.94 - 1.13]	0.47
	30 - < 35	1.07 [0.97 - 1.17]	0.18	1.21 [1.11 - 1.33]	<0.001
	35 - < 40	1.13 [1.02 - 1.26]	<0.05	1.24 [1.12 - 1.38]	<0.001
	> 40	1.20 [1.06 - 1.35]	<0.01	1.54 [1.38 - 1.72]	<0.001
Hispanic (Subgroup size: Traditional, n = 32,337; Corrected, n = 32,733)	< 18.5	1.00 [0.67 - 1.49]	1.00	1.00 [0.68 - 1.48]	0.99
	18.5 - < 25	reference	n/a	reference	n/a
	25 - < 30	1.05 [0.96 - 1.15]	0.28	1.01 [0.93 - 1.10]	0.82
	30 - < 35	1.15 [1.05 - 1.26]	<0.01	1.24 [1.13 - 1.36]	<0.001
	35 - < 40	1.21 [1.09 - 1.35]	<0.01	1.41 [1.27 - 1.56]	<0.001
	> 40	1.32 [1.17 - 1.49]	<0.001	1.62 [1.44 - 1.82]	<0.001
Asian / other (Subgroup size: Traditional, n = 16,731; Corrected, n = 17,012)	< 18.5	1.64 [1.13 - 2.37]	< 0.01	1.69 [1.19 - 2.41]	<0.01
	18.5 - < 25	reference	n/a	reference	n/a
	25 - < 30	1.18 [1.05 - 1.31]	<0.01	1.13 [1.01 - 1.26]	<0.05
	30 - < 35	1.24 [1.10 - 1.40]	<0.001	1.27 [1.13 - 1.42]	<0.001
	35 - < 40	1.51 [1.32 - 1.75]	<0.001	1.64 [1.42 - 1.88]	<0.001
	> 40	1.35 [1.13 - 1.62]	<0.01	1.63 [1.38 - 1.93]	<0.001
White (Subgroup size: Traditional, n = 10,254; Corrected, n = 10,405)	< 18.5	1.30 [0.80 - 2.12]	0.29	1.36 [0.88 - 2.09]	0.16
	18.5 - < 25	reference	n/a	reference	n/a
	25 - < 30	1.20 [1.04 - 1.38]	<0.05	1.13 [1.00 - 1.29]	0.06
	30 - < 35	1.51 [1.30 - 1.75]	<0.001	1.35 [1.17 - 1.55]	<0.001
	35 - < 40	1.57 [1.31 - 1.88]	<0.001	1.36 [1.15 - 1.61]	<0.001
	> 40	1.51 [1.22 - 1.88]	<0.001	1.62 [1.33 - 1.97]	<0.001

Abbreviations: BMI, body mass index; CI, confidence interval; eGFR, estimated glomerular filtration rate

*Multivariable model adjusted for age, sex, race/ethnicity, and baseline income, insurance status, hypertension, diabetes, and coronary artery disease.

Table S2. Association* of BMI with Incident Anion Gap Metabolic Acidosis among Subgroup without Diabetes

BMI	Hazard Ratio	95% CI	<i>p</i>-value
< 18.5	1.07	0.77 - 1.50	0.69
18.5 - < 25	Reference	-	-
25 - < 30	1.05	0.96 - 1.15	0.31
30 - < 35	1.26	1.15 - 1.39	<0.001
35 - < 40	1.37	1.22 - 1.55	<0.001
>= 40	1.58	1.38 - 1.82	<0.001

Abbreviations: BMI, body mass index; CI, confidence interval

*Multivariable model adjusted for age, sex, race/ethnicity, and baseline income, insurance status, hypertension, coronary artery disease, and estimated glomerular filtration rate

Table S3. Association of BMI with Incident Anion Gap Metabolic Acidosis (Bicarbonate < 22 mEq/L)

BMI	Hazard Ratio	95% CI	<i>p</i>-value
< 18.5	1.60	1.15 - 2.22	<0.01
18.5 - < 25	Reference	-	-
25 - < 30	1.05	0.95 - 1.16	0.32
30 - < 35	1.11	1.01 - 1.23	0.04
35 - < 40	1.19	1.06 - 1.35	<0.01
>= 40	1.24	1.08 - 1.43	<0.01

Abbreviations: BMI, body mass index; CI, confidence interval

*Multivariable model adjusted for age, sex, race/ethnicity, and baseline income, insurance status, hypertension, coronary artery disease, and estimated glomerular filtration rate

Table S4. Association of BMI with Change in Bicarbonate and Corrected Anion Gap over Study Period

BMI	Model 1*			Model 2**		
	Bicarbonate (mEq/L)			Bicarbonate (mEq/L)		
	Delta	95% CI	p-value	Delta	95% CI	p-value
< 18.5	-0.07	-0.17 – 0.03	0.16	0.03	-0.07 – 0.12	0.58
18.5 - < 25	Reference	–	–	Reference	–	–
25 – < 30	-0.01	-0.03 – 0.03	0.89	-0.07	-0.10 – -0.05	<0.001
30 – < 35	-0.04	-0.07 – -0.01	<0.01	-0.11	-0.14 – -0.08	<0.001
35 – < 40	-0.05	-0.09 – -0.01	<0.01	-0.09	-0.13 – -0.05	<0.001
>= 40	-0.03	-0.07 – 0.01	0.14	-0.02	-0.06 – 0.02	0.33

BMI	Model 1*			Model 2**		
	Anion gap (mEq/L)			Anion gap (mEq/L)		
	Delta	95% CI	p-value	Delta	95% CI	p-value
< 18.5	0.17	0.02 – 0.32	0.03	0.15	0.01 – 0.30	0.04
18.5 - < 25	Reference	–	–	Reference	–	–
25 – < 30	0.13	0.08 – 0.17	<0.001	0.13	0.09 – 0.17	<0.001
30 – < 35	0.35	0.30 – 0.40	<0.001	0.32	0.27 – 0.37	<0.001
35 – < 40	0.56	0.50 – 0.62	<0.001	0.50	0.44 – 0.56	<0.001
>= 40	0.87	0.80 – 0.94	<0.001	0.79	0.73 – 0.86	<0.001

Abbreviations: BMI, body mass index; CI, confidence interval

*Multilevel mixed effects models; basic model adjusted for time and baseline bicarbonate or corrected anion gap

**Multilevel mixed effects models; full model adjusted for age, sex, race/ethnicity, time, baseline bicarbonate or corrected anion gap, and baseline income, insurance status, estimated glomerular filtration rate, hypertension, diabetes, and coronary artery disease.