

Sexual Orientation Disparities in Cardiovascular Biomarkers Among Young Adults

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Appendix A

Results of linear regression analyses for log C-reactive protein (CRP)^a by gender^b

	Men			Women		
	Beta	SE	p-value	Beta	SE	p-value
Gay/bisexual	0.21	0.09	0.02	-0.18	0.09	0.04
Age (years)	0.02	0.01	0.03	0.00	0.01	0.69
Race						
Black	0.04	0.06	0.48	-0.15	0.06	0.01
Asian	-0.09	0.08	0.29	-0.34	0.10	0.00
Hispanic	0.07	0.06	0.21	0.09	0.06	0.13
Multiracial, Native American, other	-0.07	0.08	0.38	-0.11	0.08	0.16
White	ref			ref		
Education						
<High school	0.19	0.10	0.07	0.02	0.12	0.85
High school degree	0.19	0.09	0.05	0.00	0.08	0.98
Some college/technical degree	0.15	0.08	0.08	-0.08	0.08	0.28
Bachelor's degree	-0.02	0.07	0.76	-0.02	0.08	0.83
Graduate degree	ref			ref		
Household income (\$)						
Missing	0.15	0.09	0.10	0.07	0.12	0.55
0-24,999	0.01	0.09	0.93	0.08	0.08	0.27
25,000-39,999	0.02	0.08	0.77	0.05	0.07	0.46
40,000-74,999	-0.04	0.06	0.53	0.13	0.06	0.04
75,000-99,999	-0.07	0.08	0.35	0.08	0.07	0.26
≥100,000	ref			ref		
Smoking status (%)						
Current	0.23	0.05	<.0001	-0.12	0.05	0.03
Past/Intermittent	0.05	0.04	0.26	0.00	0.05	0.92
Never	ref			ref		
Alcohol consumption						
Moderate drinker	-0.06	0.05	0.20	0.09	0.05	0.05
Heavy drinker	0.04	0.10	0.70	-0.06	0.17	0.71
Abstainer	ref			ref		
Regular physical activity	-0.08	0.04	0.04	-0.05	0.05	0.23
BMI	0.07	0.00	<0.0001	0.08	0.00	<0.0001
Cardiac medication	-0.01	0.10	0.96	-0.07	0.12	0.57
Aspirin or other anti-inflammatory medication	0.13	0.05	0.004	0.10	0.04	0.02
Illness in past 2 weeks	0.21	0.04	<0.0001	0.06	0.04	0.17
R²			0.22			0.24

^aThe sensitivity of the CRP assay was 0.035 mg/L; the within-assay coefficient of variation was 8.1%; and between-assay coefficient of variation was 11.0%. Information obtained from Whitsel et al.¹

^bLinear regression analyses were conducted separately by gender. Gay/bisexual and lesbian/bisexual categories were compared to heterosexuals (i.e., the reference category). All models take into account the complex sample design, and sample weights.

References for Appendix A

1. Whitsel EA, Cuthbertson CC, Tabor JW, et al. Measures of inflammation and immune function. Add Health Wave IV Documentation. Chapel Hill NC: Carolina Population Center, 2012.

Appendix B

Results of linear regression analyses for glycosylated hemoglobin (log HbA1c)^a by gender^b

	Men			Women		
	Beta	SE	p-value	Beta	SE	p-value
Gay/bisexual	0.00	0.01	0.58	0.00	0.01	0.58
Age (years)	0.00	0.00	0.01	0.00	0.00	0.92
Race						
Black	0.07	0.01	<0.0001	0.06	0.01	<0.0001
Asian	0.03	0.01	<0.0001	0.03	0.01	<0.0001
Hispanic	0.02	0.01	<0.0001	0.02	0.00	<0.0001
Multiracial, Native American, other	0.02	0.01	0.01	0.02	0.01	0.03
White	ref			ref		
Education						
<High school	0.01	0.01	0.35	0.02	0.01	0.04
High school degree	0.01	0.01	0.29	0.00	0.01	0.52
Some college/technical degree	0.00	0.01	0.49	0.00	0.00	0.79
Bachelor's degree	0.00	0.01	0.85	0.00	0.01	0.59
Graduate degree	ref			ref		
Household income (\$)						
Missing	0.01	0.01	0.10	0.01	0.01	0.41
0–24,999	0.01	0.01	0.11	0.01	0.01	0.20
25,000–39,999	0.00	0.01	0.73	0.00	0.00	0.89
40,000–74,999	0.01	0.01	0.27	0.00	0.00	0.60
75,000–99,999	0.00	0.01	0.67	0.00	0.00	0.96
≥100,000	ref			ref		
Smoking status (%)						
Current	0.01	0.00	0.16	0.00	0.00	0.91
Past/intermittent	0.00	0.00	0.27	0.00	0.00	0.19
Never	ref			ref		
Alcohol consumption						
Moderate drinker	-0.01	0.00	0.09	-0.01	0.00	0.02
Heavy drinker	-0.03	0.01	0.002	-0.02	0.01	0.01
Abstainer	ref			ref		
Regular physical activity	-0.01	0.00	0.01	-0.01	0.00	0.03
BMI	0.003	0.0003	<0.0001	0.003	0.0003	<0.0001
Antidiabetic medication	0.45	0.06	<0.0001	0.26	0.04	<0.0001
R²			0.28			0.27

^aThe sensitivity of the conventional Roche HbA1c assay was 3%; the within- and between-run coefficients of variation were 2.2%–2.4%. Information obtained from Whitsel et al.¹

^bLinear regression analyses were conducted separately by gender. Gay/bisexual and lesbian/bisexual categories were compared to heterosexuals (i.e., the reference category). All models take into account the complex sample design, and sample weights.

References for Appendix B

1. Whitsel EA, Tabor JW, Nguyen QC, et al. Measures of glucose homeostasis. Add Health Wave IV Documentation. Chapel Hill NC: Carolina Population Center, 2012.

Appendix C

Results of linear regression analyses for C-reactive protein by gender^a: stratified by individuals with a self-reported illness in past 2 weeks

	Men, gay/bisexual		Women, lesbian/bisexual	
	β (SE)	<i>p</i> -value	β (SE)	<i>p</i> -value
Sample with self-reported illness in past 2 weeks (<i>n</i>=3024, 30.5%)^b				
Model 1 ^c	0.10 (0.14)	0.51	0.10 (0.14)	0.45
Model 2 ^d	0.13 (0.14)	0.35	0.17 (0.17)	0.31
Model 3 ^e	0.20 (0.14)	0.17	0.05 (0.13)	0.71
Sample without self-reported illness in past 2 weeks (<i>n</i>=6876, 69.5%)				
Model 1 ^c	0.18 (0.17)	0.29	-0.25 (0.11)	0.02
Model 2 ^d	0.17 (0.12)	0.16	-0.25 (0.11)	0.02
Model 3 ^e	0.22 (0.11)	0.055	-0.28 (0.11)	0.01

Note: Individuals with CRP>10 (indicative of active infection) were excluded, as described in the Methods section of the main text.

^a Linear regression analyses were conducted separately by gender. Gay/bisexual and lesbian/bisexual categories were compared to heterosexuals (i.e., the reference category). All models take into account the complex sample design, and sample weights; Illnesses in the past 2 weeks reflects self-reported cold or flu symptoms, fever, nausea, vomiting, diarrhea, night sweats, blood in stool or urine, frequent urination, or skin rash in the past 2 weeks.

^b Approximately 30% of the sample self-reported having an illness in the past 2 weeks, which appears somewhat high relative to general population estimates for these illnesses. Although this does not bias the current results (i.e., the estimates are similar in trend between the previously ill and healthy individuals), future studies are needed to address the reliability and validity of these self-reported illnesses.

^c Model 1 is adjusted for age.

^d Model 2 is adjusted for age, race/ethnicity (ref=white); education (<high school, high school degree, some college/technical degree, bachelor's degree, graduate degree; ref=graduate degree); income (\$0-\$24,999, \$25,000-\$39,999, \$40,000-\$74,999, \$75,000-\$99,999, >\$100,000; ref= >\$100,000).

^e Model 3 is adjusted for covariates in Model 2 plus smoking (never, previous/intermittent, regular smoker; ref=never); regular physical activity (dichotomous; ref=regular exercise); alcohol consumption (daily or almost every day); BMI; cardiac medication use (ref=no cardiac medication); and aspirin or other anti-inflammatory medications in the past 24 hours (ref=no aspirin or other anti-inflammatory medication use in past 24 hours).

Appendix D

Results of linear regression analyses for systolic and diastolic blood pressure, pulse rate, C-reactive protein, and hemoglobin A1c by gender^a: models estimated using list-wise deletion to show that findings are consistent with complete case analyses

	Men gay/bisexual		Women lesbian/bisexual	
	β (SE)	Adjusted R ²	β (SE)	Adjusted R ²
Systolic blood pressure (mm/Hg)				
Model 1 ^b	1.11 (1.26)	0.001	2.14 (0.91)*	0.004
Model 2 ^c	1.30 (1.29)	0.005	1.69 (0.88)~	0.03
Diastolic blood pressure (mm/Hg)				
Model 1 ^b	2.30 (1.17)	0.01	0.95 (0.74)	0.01
Model 2 ^c	2.53 (1.18)*	0.02	0.58 (0.72)	0.03
Pulse rate (BPM)				
Model 1 ^b	3.20 (1.51)*	0.004	-0.08 (0.99)	0.00
Model 2 ^c	3.73 (1.55)*	0.03	-0.62 (0.97)	0.02
Log C-reactive protein (mg/L)				
Model 1 ^b	0.10 (0.11)	0.004	-0.10 (0.09)	0.00
Model 2 ^c	0.15 (0.10)	0.03	-0.13 (0.09)	0.02
Log hemoglobin A1c (%)				
Model 1 ^b	-0.01 (0.01)*	0.01	0.01 (0.01)	0.001
Model 2 ^c	-0.01 (0.01)	0.07	0.01 (0.01)	0.09

Note: Boldface indicates significance.

^a Linear regression analyses were conducted separately by gender. Gay/bisexual and lesbian/bisexual categories were compared to heterosexuals (i.e., the reference category). All models take into account the complex sample design, and sample weights;

^bModel 1 is adjusted for age.

^cModel 2 is adjusted for age; race/ethnicity (ref=white); education (<high school, high school degree, some college/technical degree, bachelor's degree, graduate degree; ref=graduate degree); income (\$0-\$24,999, \$25,000-\$39,999, \$40,000-\$74,999, \$75,000-\$99,999, \geq \$100,000; ref= \geq \$100,000).

* $p < 0.05$

BPM, beats per minute

Appendix E

Results of linear regression analyses for systolic blood pressure by gender^a

	Men			Women		
	Beta	SE	p-value	Beta	SE	p-value
Gay/bisexual	1.86	1.19	0.12	0.78	0.95	0.41
Age (years)	0.15	0.14	0.29	0.28	0.12	0.02
Race						
Black	-0.16	0.63	0.80	1.32	0.59	0.03
Asian	0.03	1.35	0.98	-0.53	1.24	0.67
Hispanic	-1.22	0.76	0.11	-0.75	0.72	0.30
Multiracial, Native American, other	-0.19	0.97	0.85	-1.17	0.86	0.18
White	ref			ref		
Education						
<High school	1.17	1.12	0.30	-1.30	1.12	0.25
High school degree	0.81	1.05	0.44	-0.60	0.89	0.50
Some college/technical degree	-0.11	0.87	0.90	-0.67	0.72	0.36
Bachelor's degree	0.96	0.84	0.25	-0.58	0.57	0.31
Graduate degree	ref			ref		
Household income (\$)						
Missing	1.36	0.97	0.16	0.78	0.94	0.41
0-24,999	1.52	0.79	0.06	1.16	0.87	0.19
25,000-39,999	1.53	0.75	0.04	1.44	0.82	0.08
40,000-74,999	1.35	0.65	0.04	1.73	0.67	0.01
75,000-99,999	0.93	0.72	0.20	0.99	0.84	0.24
≥100,000	ref			ref		
Smoking status (%)						
Current	0.96	0.55	0.08	1.92	0.66	0.00
Past/intermittent	0.75	0.53	0.16	-0.24	0.48	0.62
Never	ref			ref		
Alcohol consumption						
Moderate drinker	1.16	0.44	0.01	1.02	0.51	0.05
Heavy drinker	4.46	1.42	0.002	6.35	1.92	0.001
Abstainer	ref			ref		
Regular physical activity	0.23	0.43	0.60	-0.40	0.43	0.35
BMI	0.54	0.04	<0.0001	0.59	0.03	<0.0001
Cardiac medication	3.19	1.24	0.01	5.15	1.52	0.001
R²			0.09			0.16

^aLinear regression analyses were conducted separately by gender. Gay/bisexual and lesbian/bisexual categories were compared to heterosexuals (i.e., the reference category). All models take into account the complex sample design, and sample weights.

Appendix F

Results of linear regression analyses for diastolic blood pressure by gender^a

	Men			Women		
	Beta	SE	p-value	Beta	SE	p-value
Gay/bisexual	2.99	1.20	0.01	-0.08	0.81	0.93
Age (years)	0.53	0.09	<0.0001	0.50	0.10	<0.0001
Race						
Black	-0.62	0.49	0.21	0.98	0.41	0.02
Asian	0.86	0.96	0.37	0.83	0.87	0.34
Hispanic	-1.02	0.54	0.06	-0.80	0.62	0.20
Multiracial, Native American, other	0.02	0.83	0.98	-0.06	0.67	0.93
White	ref			ref		
Education						
<High school	2.01	0.77	0.01	-0.44	0.96	0.65
High school degree	1.34	0.70	0.06	-0.32	0.74	0.67
Some college/technical degree	0.86	0.61	0.16	-0.18	0.57	0.76
Bachelor's degree	1.25	0.64	0.05	-0.22	0.54	0.69
Graduate degree	ref			ref		
Household income (\$)						
Missing	0.56	0.77	0.47	1.60	0.73	0.03
0-24,999	0.79	0.56	0.16	1.57	0.61	0.01
25,000-39,999	1.01	0.54	0.06	1.30	0.61	0.03
40,000-74,999	0.90	0.48	0.06	1.31	0.48	0.01
75,000-99,999	0.66	0.53	0.22	1.02	0.68	0.14
≥100,000	ref			ref		
Smoking status (%)						
Current	0.93	0.42	0.03	0.71	0.51	0.17
Past/intermittent	0.60	0.39	0.13	-0.06	0.44	0.89
Never	ref			ref		
Alcohol consumption						
Moderate drinker	0.81	0.37	0.03	0.85	0.34	0.01
Heavy drinker	3.44	0.95	0.0004	4.69	1.53	0.003
Abstainer	ref			ref		
Regular physical activity	-0.90	0.32	0.01	-0.77	0.37	0.04
BMI	0.36	0.03	<0.0001	0.33	0.02	<0.0001
Cardiac medication	2.63	0.92	0.01	4.09	1.29	0.002
R²			0.09			0.11

^aLinear regression analyses were conducted separately by gender. Gay/bisexual and lesbian/bisexual categories were compared to heterosexuals (i.e., the reference category). All models take into account the complex sample design, and sample weights.

Appendix G

Results of linear regression analyses for pulse rate by gender^a

	Men			Women		
	Beta	SE	p-value	Beta	SE	p-value
Gay/bisexual	4.16	1.56	0.01	-0.14	0.95	0.88
Age	0.22	0.12	0.08	0.03	0.11	0.81
Race						
Black	-1.15	0.66	0.08	-0.07	0.62	0.91
Asian	-0.60	1.17	0.61	-2.75	1.08	0.01
Hispanic	-0.91	0.77	0.24	-1.18	0.80	0.14
Multiracial, Native American, other	-0.71	0.89	0.43	2.04	0.78	0.01
White	ref			ref		
Education						
<High school	2.41	1.20	0.05	1.03	1.01	0.31
High school degree	1.79	0.95	0.06	0.74	0.79	0.35
Some college/technical degree	1.47	0.88	0.10	0.39	0.62	0.53
Bachelor's degree	0.37	0.99	0.71	-0.38	0.66	0.57
Graduate degree	ref			ref		
Household income (\$)						
Missing	1.48	0.95	0.12	0.79	1.00	0.43
0-24,999	1.30	0.81	0.11	0.97	0.84	0.25
25,000-39,999	0.77	0.79	0.34	0.39	0.75	0.61
40,000-74,999	-0.06	0.61	0.92	0.90	0.59	0.13
75,000-99,999	-0.54	0.68	0.43	0.56	0.67	0.40
≥100,000	ref			ref		
Smoking status (%)						
Current	3.67	0.56	<0.0001	1.22	0.54	0.03
Past/intermittent	0.83	0.43	0.06	-0.64	0.53	0.23
Never	ref			ref		
Alcohol consumption						
Moderate drinker	-0.63	0.53	0.23	-0.92	0.47	0.05
Heavy drinker	1.56	1.31	0.24	-2.66	1.76	0.13
Abstainer	ref			ref		
Regular physical activity	-2.75	0.41	<0.0001	-1.68	0.34	<0.0001
BMI	0.43	0.03	<0.0001	0.26	0.02	<0.0001
Cardiac medication	1.77	1.31	0.18	0.24	1.10	0.83
R²			0.11			0.07

^aLinear regression analyses were conducted separately by gender. Gay/bisexual and lesbian/bisexual categories were compared to heterosexuals (i.e., the reference category). All models take into account the complex sample design, and sample weights.