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Effects of Cocaine and/or Heroin Use on Resting Cardiovascular Function

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Effects of Cocaine and/or Heroin Use on Resting Cardiovascular Function

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BACKGROUND

Regular cocaine and/or heroin use is associated with major health risks, especially cardiovascular disease, but confounded by other factors, e.g. demographics, obesity, and legal substance use. It is unclear whether these other factors influence cardiovascular function to a greater extent than cocaine or heroin. Such information could be useful to clinicians who encounter these patients.

OBJECTIVES

We examined effects of chronic (years of regular use) and recent (past-month) use of cocaine and heroin, controlling for other factors, on resting cardiovascular function.

METHODS

Measures: In a sample of cocaine and/or heroin users ($N=292$), we obtained data on demographics, body mass index (BMI), history of substance use (tobacco, alcohol, marijuana, cocaine and heroin), and electrocardiogram, heart rate (HR) and blood pressure (BP).

Analyses: Following bivariate correlations, three-block (1: demographics, BMI; 2: tobacco, alcohol, marijuana; 3: cocaine, heroin) regression analyses were conducted to predict cardiovascular measures.

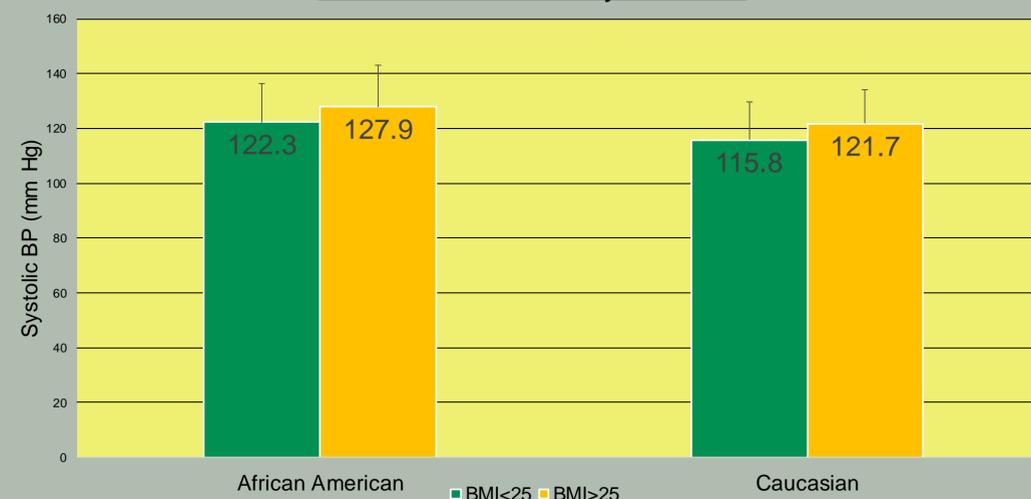
DEMOGRAPHIC DATA

Table 1: Substance use and Chronic Demographic Data

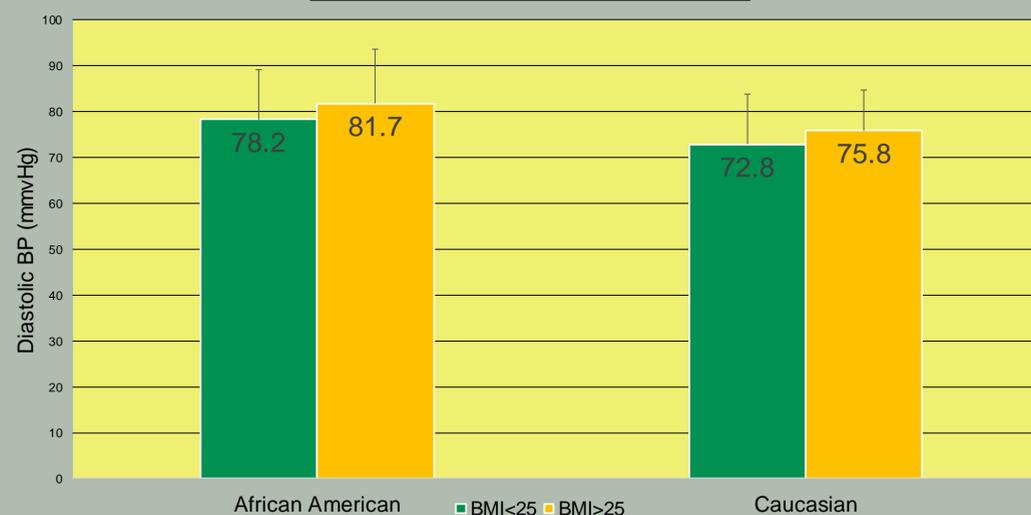
	African American BMI<25 (n=94)	African American BMI>25 (n=83)	Caucasian BMI<25 (n=71)	Caucasian BMI>25 (n=44)	Overall (n=292)	Effects	P value
Age	47.0 (6.7)	45.2 (7.3)	36.5 (10.0)	37.1 (10.5)	42.4 (9.6)	Race	0.000
Sex (% male)	74%	72%	77%	84%	76%		0.016
Years tobacco use	16.6 (7.5)	18.7 (6.6)	16.9 (5.5)	15.4 (7.3)	16.7 (6.7)	Race*BMI	0.030
Past month	24.6 (10.1)	25.1 (9.8)	28.3 (6.0)	26.4 (9.4)	25.9 (9.1)	Race	0.024
Years alcohol use	15.4 (10.7)	17.3 (9.5)	12.2 (8.4)	11.7 (8.6)	14.6 (9.7)	Race	0.000
Past month	6.7 (8.7)	6.1 (8.0)	1.5 (3.5)	3.0 (5.2)	4.7 (7.3)	Race	0.000
Years marijuana use	13.0 (7.7)	13.8 (8.6)	11.6 (6.8)	12.9 (6.8)	12.9 (7.7)		
Past month	3.9 (7.4)	4.5 (8.4)	3.3 (7.7)	4.2 (7.9)	4.0 (7.8)		
Years cocaine use	15.0 (9.8)	14.8 (9.7)	10.3 (10.3)	11.5 (11.3)	13.3 (10.3)	Race	0.001
Past month	12.7 (10.8)	12.0 (10.5)	7.3 (10.3)	7.8 (9.5)	10.4 (10.6)	Race	0.000
Years heroin use	13.7 (13.9)	7.8 (10.4)	10.0 (9.1)	8.6 (9.0)	10.4 (11.4)	BMI	0.008
Past month	13.1 (13.8)	9.8 (13.0)	22.3 (11.9)	22.7 (12.1)	15.8 (13.9)	Race	0.000

RESULTS

Race and BMI on Systolic BP



Race and BMI on Diastolic BP



Figures: Mean (+1 SD) systolic BP (upper panel) and diastolic BP (lower panel) as a function of Race (African American vs. Caucasian) and BMI (cut point = 25 kg/m²). For both systolic and diastolic BP, African American individuals and those with a BMI>25 had significantly higher average blood pressure.

RESULTS

Figure: Cardiovascular measures with their significant predictors.

Bolded predictors are related to heroin or cocaine use.

There was a significant effect of heroin on seated HR and cocaine on QTc interval.

Measure	Significant Predictors	Odds Ratio	Cumulative adjusted r ²	P value
Seated HR (bpm)	Heroin days past month	-0.147	0.018	0.014
%Sinus bradycardia (<60 bpm)	Heroin days past month	1.021	0.107	0.040
	Avg. daily alcohol use Years reg. marijuana use	-0.225 1.024		0.001 0.016
QTc interval (ms)	Cocaine days past month	0.421	0.117	0.008
	Years reg. cocaine use	0.122	0.127	0.047
LVH (%)	BMI	0.225	0.046	0.000
	Sex	-0.158	0.072	0.006
T-wave abnormality (%)	Avg. daily marijuana use	-0.152	0.089	0.008
	Tobacco days past month	-0.310	0.104	0.056
Heroin days past month	Heroin days past month	-0.969	0.91	0.024
	Race	2.344		0.052
Heroin days past month	Heroin days past month	-0.945	0.211	0.049

CONCLUSION

Summary: Controlling for covariates, cocaine and heroin incrementally predicted modest additional variance in resting bradycardia and QTc interval. Clinicians should first consider effects of demographics (especially race and BMI) and recent use of tobacco, alcohol and marijuana before assuming that cocaine and heroin are influencing these measures.

Future Directions: Further understanding of changes in cardiovascular function due to use of these drugs, and substances used in combination with these drugs, could inform clinicians who screen and prescribe medications to drug-seeking or treatment-seeking individuals. A healthy control group could help to further clarify the chronic effects of cocaine and/or heroin on cardiovascular function.

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