

Identifying Cardiovascular Risk Factors in a High-Risk Community: Strategies to Address Cardiovascular Health Disparities

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ABSTRACT

National health care data consistently reveal a significant disparity in the prevalence of cardiovascular risk factors, morbidity and mortality among African-Americans and Latinos, especially in low socioeconomic communities. Community-based outreach screening programs have been described as an essential component of strategies to address cardiovascular health disparities. However, no prior study has documented the ability of these programs to accurately identify the prevalence of cardiovascular risk factors in high-risk communities or provide population specific (ethnicity, gender) data within a community. In this cross-sectional study of Central Harlem residents in New York City, based on data obtained from a community outreach program, we have collected and analyzed various clinical parameters to evaluate cardiovascular risk factors within the Harlem community. We have observed that a high percentage of African-Americans have hypertension, obesity and smoking habits as compared to other ethnic groups. African-American women are significantly more likely to have obesity and dyslipidemia than African-American men. In addition, we have identified a concerning subpopulation of community residents who report not having a primary care doctor and therefore have limited access to regular medical care. The study results correspond to nationally collected data which validate the findings and demonstrate the outreach program's ability to accurately identify cardiovascular risk factors in a high-risk community. These findings further emphasize the importance of community outreach programs in addressing cardiovascular health disparities by educating and motivating populations affected by disparities and performing community-based data collection which can guide intervention strategies.

INTRODUCTION

Cardiovascular disease remains the leading cause of death in the United States among all populations [1]. However, significant advances in cardiovascular disease awareness, diagnostic evaluation, and therapeutic interventions have resulted in a declining trend of cardiovascular morbidity and mortality in the United States [2]. Despite these advances, and both governmental and non-governmental programs designed to promote health equity, cardiovascular health disparities remain a significant clinical concern, especially among African- Americans, Latinos, women and the poor. Extensive epidemiological research has established hypertension, diabetes, dyslipidemia, cigarette smoking and obesity as independent risk factors for cardiovascular diseases [3]. Although there are substantial differences in cardiovascular risk factors among different ethnic groups, there is limited information available regarding the distribution of these risk factors in specific communities. These data are essential regarding the implementation of community-based strategies to address cardiovascular health disparities as recommended by national organizations, including the United States Department of Health and Human Services' Action Plan to Reduce Racial and Ethnic Health Disparities and the National Partnership for Action National Stakeholder Strategy for Achieving Health Equity [4, 5]. Current national surveys such as Behavioral Risk Factor Surveillance System (BRFSS) and the National Health and Nutrition Examination Survey (NHANES) that aim to determine the prevalence of cardiovascular risk factors do not allow community specific estimates [6]. Hence, it is imperative to have current and accurate information on the prevalence of cardiovascular risk factors in specific communities to guide the development of effective strategies to prevent and address cardiovascular diseases and disparities. Community-based outreach screening programs have been described as an essential component of strategies to address cardiovascular health disparities. However, no prior study has documented the ability of these programs to accurately identify the prevalence of cardiovascular risk factors in high-risk communities or provide population specific (ethnicity, gender) data within a community.

Table 1: Data from Heart Disease and Stroke Statistics-2011 Update: American Heart Association highlighting Cardiovascular Disease Disparities among African Americans and Mexican Americans.

Cardiovascular Health Disparities: Relative and Absolute Risks				
Characteristic	Whites	African Americans	RR	AR
Total Cardiovascular Disease Prevalence				
Males	37.4%	44.8%	19.8%	7.4%
Females	33.8%	47.3%	39.9%	13.5%
Stroke – Prevalence				
Males	2.4%	4.5%	87.5%	2.1%
Females	3.3%	4.4%	33.3%	1.1%
Hypertension – Prevalence				
Males	33.9%	43%	26.8%	9.1%
Females	31.9%	45.7%	43.3%	13.8%
Heart Failure – Prevalence				
Males	2.7%	4.5%	66.7%	1.8%
Females	1.8%	3.8%	111.1%	2.0%
Obesity (BMI≥30) – Prevalence				
Males	32.1%	37%	15.3%	4.9%
Females	32.8%	51%	55.5%	18.2%
DM – Prevalence				
Males	6.8%	14.3%	110.3%	7.5%
Females	6.5%	14.7%	126.2%	8.2%
DM – Undiagnosed – Prevalence				
Males	3.9%	4.8%	23.1%	0.9%
Females	1.9%	4%	110.5%	2.1%
	Whites	Mexican Americans	RR	AR
Obesity (BMI≥30) – Prevalence				
Females	32.8%	43.4%	32.3%	10.6%
DM – Prevalence				
Males	6.8%	11%	61.8%	4.2%
Females	6.5%	12.7%	95.4%	6.2%
DM – Undiagnosed – Prevalence				
Males	3.9%	6.3%	61.5%	2.4%
Females	1.9%	3.8%	100.0%	1.9%

An analysis of the most recent heart disease and stroke statistics compiled by the American Heart Association in 2011, and documented in

[Table 1](#), reveal that cardiovascular health disparities continue to impact significantly on affected populations, particularly African-Americans [1]. The data reveal that African-Americans are at significantly increased relative risk for total cardiovascular disease prevalence, with specific disparities involving stroke, hypertension, heart failure, diabetes and obesity when compared to white Americans. African-American women are at an additional increased risk for cardiovascular disease prevalence when compared to African-American men. Mexican Americans, a representative community for Latinos in the United States, have an increased relative risk of obesity among women, and diabetes for both men and women. While Mexican Americans are not representative of all Latinos in the United States given the diversity of this population, national health statistics are currently only available for this community.

The increased relative risks for African-American men with stroke, African-American women with heart failure and both African-American men and women and Mexican American women with diabetes are particularly concerning because they approach or exceed 100%, indicating a two-fold or greater increase in the risk. When taken together these disparities in risk factor prevalence result in cardiovascular age-adjusted death rates which are 34% higher for African-Americans than for the overall United States [1]. This represents a 12% increase in the age-adjusted death rates from 2005, an extremely concerning finding that despite decreases in overall cardiovascular mortality, the disparity in mortality for African-Americans is worsening [7]. African-Americans and Latinos are the largest minority groups and contribute to 28.9% of the total population [8]. Therefore, increasing disparity trends are extremely concerning because racial and minority groups are projected to account for almost half of the US population by 2050 [9]. Specific determinants, including ethnicity, gender, access to healthcare, environmental, income and education level, contribute to cardiovascular health disparities and help define particularly high-risk communities where multiple risk factors for disproportionate outcomes exists, including neighborhoods like Central Harlem in New York City.

Central Harlem is a predominantly African-American community (67 % as compared to 25 % in New York City), located in northern Manhattan. Approximately 40% of the population live below the US federal poverty level and the high school graduation rate is 25% [10]. Cardiovascular health data from as far back as between 1979 and 1981 revealed that the leading cause of excess deaths in Harlem in persons younger than 65 years were cardiovascular diseases [11]. Studies have documented that more than 80% of men and women in Harlem have at least one cardiovascular risk factor, 40% of men and 51% of women had 2 or more risk factors and 9% of men and 19% of women had 3 or more risk factors [11].

Strategies to address cardiovascular health disparities should involve outreach programs designed to identify high-risk community members with the goal of educating and motivating them to affect meaningful changes which will improve their health, including increasing access to healthcare services. In addition, these programs can collect data regarding the patterns and determinants of risk-factors in the community to inform intervention strategies designed to reduce disparities. The current epidemiological study involves data collected by the Harlem Hospital Center Community Health Education and Outreach Department during their community outreach screening and education programs in Central Harlem. It reports the observed prevalence and associations of established cardiovascular risk factors among different groups in the Harlem Community.

METHODS

The Community Health Education and Outreach Department at Harlem Hospital Center conducts cardiovascular risk factor health screening and education programs throughout Central Harlem and is supported and funded by the New York City Health and Hospital Corporation. Several programs have also been funded by the Association of Black Cardiologists as part of their national efforts to reduce disparities. The objective of the community outreach program is to identify individuals with cardiovascular risk factors which require medical intervention. It also serves to increase awareness of these risk factors, including hypertension, diabetes, obesity,

smoking, and dyslipidemia, in the community and provides data for epidemiological studies regarding the prevalence of these conditions.

The Outreach Program collects data regarding blood pressure (manual BP measurements), non-fasting total cholesterol and non-fasting blood glucose (both point of care finger stick testing) during screenings at community health fairs, church programs, block and tenant association meetings and events, shelters, senior citizen centers and schools in Central Harlem. The community outreach workers are trained by qualified nurse practitioners at Harlem Hospital regarding the blood pressure, cholesterol and blood glucose measurements. The respective values are obtained using standardized manual sphygmomanometers and point of care fingerstick cholesterol and blood glucose instrumentation. In addition, they collect data through a questionnaire on cardiovascular risk factors and demographics, including age, gender, height, weight, ethnicity, current medical illnesses, smoking history and access to medical care. Each screening program participant signs an IRB approved Health Insurance Portability and Accountability Act (HIPAA) consent and Privacy Notice providing the outreach department with permission to collect and store their data including unique identifiers.

Participation in the community outreach screening programs was conducted on a voluntarily basis, community members present at the health programs were encouraged to undergo screening by the outreach staff. Only adults above age 18 were encouraged to participate with adolescents and young children being referred to the pediatric outreach team at Harlem Hospital. All participants received an individual 5-10 minute educational presentation (prepared by the Division of Cardiology at Harlem Hospital) on the risk factors associated with heart disease and the lifestyle modifications associated with their reduction. Participants with identified risk factors were additionally referred to risk reduction programs including exercise and nutrition classes conducted 5 days a week at Harlem Hospital Center. Individuals with risk factors and primary care physicians were also advised to discuss their health with their doctors. Participants with identified risk factors and no primary care physician signed an additional HIPAA consent

providing the outreach program with permission to contact them by telephone and mail to arrange an initial visit in the Cardiology Clinic at Harlem Hospital. This initiative, and the screening and follow-up of these patients to monitor the improvement of risk factors and the impact on longterm cardiovascular health represents the intervention aspect of the disparity reduction program at Harlem Hospital Center.

For the current study, the data collected by the Harlem Hospital Center Community Health Education and Outreach Department screening programs during a one year period, 2009-2010, were compiled. Unique identifiers for each participant were utilized to minimize duplicate entries after being reviewed by the outreach staff. This study was reviewed by the Institutional Review Board ensuring the confidentiality of all patient data. The data was subsequently analyzed for statistical differences in the screened cardiovascular risk factors of the groups studied for comparison. We analyzed the categorical data collected using the Fischer exact test, two-tailed, to calculate P values and determine statistical significance between the risk factors being compared among the two groups (ethnicity and gender).

RESULTS

The results represent a cross sectional study of screened cardiovascular risk factors including blood pressure, non-fasting finger stick glucose and non-fasting finger stick total cholesterol in a predominantly African- American community in Central Harlem. [Table 2](#) depicts the baseline characteristics of the 3464 participants in the studied population. There is a higher percentage of women participants compared to men and nearly a third of the population sampled was older than 65 years of age. It is also notable that the sample population consisted of a significant percentage of non-African- American ethnicities, which highlights the changing demographics in areas which have traditionally been primarily African American. At the time of screening more than a quarter of the participants had uncontrolled hypertension, slightly less than a quarter of the population was dyslipidemic and a relatively small percentage of the population had significantly elevated blood glucose (greater than 200 mg/dL) suggestive of uncontrolled or

undiagnosed diabetes. There was a significant percentage of reported obesity, 33.7%, and active smoking habits, 14.8%. The studied population has a significant self-reported medical history of cardiovascular risk factors, with 44.5% reporting hypertension, 17.7% diabetes and 32.4% dyslipidemia. In addition, 25.2% reported two cardiovascular risk factors and 8.6% reported three cardiovascular risk factors. 23.7% of all screened participants reported not having a primary medical doctor, and therefore limited access to healthcare.

Table 2: Baseline Cardiovascular Screening Data for Harlem Hospital Center, Community Outreach Program Participants 2009-2010.

Baseline Characteristics	
Characteristic	% (n=3464)
Gender	
Male	32.7%
Female	67.3%
Age >65	30%
African Americans	57.8%
Active smokers	14.8%
With Hypertension	
SBP > 140	25.6%
DBP > 80	21.8%
With Cholesterolemia (Chol> 200)	22.4%
With Diabetes (FSG > 200)	5.4%
With Obesity (BMI > 30)	33.7%
Active smokers	14.8%
With a past medical history of:	
Diabetes	17.7%
Hypertension	44.5%
Dyslipidemia	32.4%
Hypertension and Diabetes	13.1%
Hypertension and Dyslipidemia	22.1%
Hypertension, Diabetes and Diabetes	8.6%
Without regular PMD	23.7%

Table 3 denotes the differences in risk factors between African- Americans and other ethnicities.

Table 3: Cardiovascular Screening Data for Harlem Hospital Center Community Outreach Program Participants 2009-2010 Comparing African-Americans with other Ethnicities.

Ethnicity Differences in Risk Factors			
Characteristic	African American (n=2003)	Other Ethnicities (n=1397)	p value
With Hypertension (Screening BP)			
SBP > 180	54 (3%)	16 (1%)	0.001
SBP > 170	89 (5%)	33 (2%)	0.001
SBP > 160	158 (8%)	71 (5%)	0.0009
SBP > 150	305 (16%)	146 (11%)	0.0001
SBP > 140	573 (29%)	295 (21%)	0.0001
SBP > 130	916 (47%)	519 (38%)	0.0001
SBP > 120	1275 (66%)	787 (61%)	0.0001
DBP > 80	494 (25%)	247 (18%)	0.0001
With Cholesterolemia (Total Chol> 200)	432 (23%)	325 (25%)	0.12
With Diabetes (FSG > 200)	90 (4.5%)	94 (7%)	0.005
With Obesity			
BMI > 35	325 (17%)	161 (12%)	0.0001
BMI > 30	771 (41%)	384 (29%)	0.0001
BMI > 25	1449 (77%)	897 (68%)	0.0001
Active smokers	331 (17%)	176 (13%)	0.002
With a past medical history of:			
Diabetes	359 (18%)	246 (18%)	0.821
HTN	998 (50%)	520 (37%)	0.0001
Dyslipidemia	645 (32%)	465 (33%)	0.507
Diabetes and HTN	279 (14%)	170 (12%)	0.135
HTN and Dyslipidemia	472 (24%)	289 (21%)	0.047
HTN, Diabetes and Dyslipidemia	176 (9%)	121 (9%)	0.898
Without regular PMD	425 (21%)	343 (25%)	0.022

African Americans had a significantly higher rate of uncontrolled systolic and diastolic hypertension, prehypertension and severely elevated systolic blood pressure to values of 180 mm Hg. No significant difference in the prevalence of hypercholesterolemia was demonstrated between different ethnic groups. Other ethnicities were found to have a higher incidence of elevated blood glucose. The prevalence of smoking and obesity was also noted to be significantly higher in African- Americans. African- Americans reported a significantly higher rate of hypertension and a

combined past medical history of hypertension and dyslipidemia.

Table 4: Cardiovascular Screening Data for Harlem Hospital Center Community Outreach Program Participants 2009-2010 Comparing Men and Women.

Gender differences in Risk Factors			
Characteristic	Men (n=1134)	Women (n=2330)	p value
With Hypertension (Screening BP)			
SBP > 180	26 (2%)	47 (2%)	0.652
SBP > 170	44 (4%)	82 (4%)	0.633
SBP > 160	89 (8%)	146 (6%)	0.096
SBP > 150	174 (16%)	286 (13%)	0.016
SBP > 140	317 (28%)	572 (25%)	0.046
SBP > 130	532 (48%)	939 (41%)	0.0005
SBP > 120	735 (66%)	1371(61%)	0.002
DBP > 80	324 (29%)	433 (19%)	0.0001
With Cholesterolemia (Total Chol> 200)	195 (18%)	581 (27%)	0.0001
With Diabetes (FSG > 200)	53 (5%)	135 (6%)	0.157
With Obesity			
BMI > 35	112 (10%)	377 (17%)	0.0001
BMI > 30	319 (30%)	850 (39%)	0.001
BMI > 25	785 (73%)	1604 (74%)	0.736
Active smokers	237 (21%)	277 (12%)	0.0001
With a past medical history of:			
Diabetes	182 (16%)	434 (19%)	0.064
HTN	414 (37%)	1128 (48%)	0.0001
Dyslipidemia	307 (27%)	817 (35%)	0.0001
Diabetes and HTN	123(11%)	332 (14%)	0.005
HTN and Dyslipidemia	195 (17%)	573 (25%)	0.0001
HTN, Diabetes and Dyslipidemia	80 (7%)	220 (9%)	0.019
Without regular PMD	344 (30%)	453 (19%)	0.0001

Table 4 denotes the differences in risk factors between men and women participants. The percentage of men with uncontrolled systolic hypertension at the time of screening (systolic BP > 140 mm Hg) was significantly higher compared to women. In addition men had significantly higher rates of prehypertension and diastolic hypertension. Notably, this difference narrowed at systemic blood pressures greater than 160mmHg. The prevalence of dyslipidemia was significantly higher in women compared to men. Significantly elevated blood glucose suggestive of uncontrolled or undiagnosed diabetes prevalence

had no significant difference between the genders. A significant percentage of women were obese compared to men whereas a significant percentage of men were smokers compared to women. Women were found to have higher percentages of reported cardiovascular risk factors including hypertension and dyslipidemia and higher rates of multiple risk factors. These cardiovascular risk factor trends were noted in spite of higher rates of access to a primary care doctor reported by women participants.

Table 5: Cardiovascular Screening Data for Harlem Hospital Center Community Outreach Program Participants Without Primary Care Doctor 2009-2010.

Prevalence of Risk Factors in patients without a regular PMD	
Characteristic	(n=821)
Gender (n=797)	
Male	344 (43%)
Female	453 (57%)
Ethnicity (n=768)	
African American	425 (55.3%)
Other Ethnicities	343 (44.7%)
Age (n=759)	
> 65 years	184 (24.2%)
< 65 years	575 (75.8%)
With Hypertension	
SBP > 180	19 (2%)
SBP > 170	30 (4%)
SBP > 160	53 (7%)
SBP > 150	108 (14%)
SBP > 140	202 (25%)
SBP > 130	347 (43%)
SBP > 120	506 (63%)
DBP > 80	207 (26%)
With Cholesterolemia (Chol> 200)	166 (22%)
With Diabetes (FSG > 200)	34 (4%)
With Obesity	
BMI > 35	80 (11%)
BMI > 30	222 (30%)
BMI > 25	505 (69%)
Active smokers	122 (15%)
With a past medical history of:	
Diabetes	104 (13%)
HTN	269 (33%)
Dyslipidemia	181 (22%)
Diabetes and HTN	71 (9%)
HTN and Dyslipidemia	110 (13%)
HTN, Diabetes and Dyslipidemia	43 (5%)

[Table 5](#) denotes the prevalence of risk factors in individuals who reported having no access to a primary care physician (PCP). 63% of this population had prehypertension, 25% had uncontrolled systolic hypertension and 26% had uncontrolled diastolic hypertension at the time of screening. 22% were found to have hypercholesterolemia, while 4% had elevated blood glucose levels concerning for uncontrolled or undiagnosed diabetes. In addition 30% reported obesity and 15% reported active smoking. 68% of this population reported having hypertension, diabetes or hypercholesterolemia and 27% reported multiple risk factors. Participants who reported not having access to a primary care physicians were more likely to be African- American, women, (though as previously stated both groups reported higher rates of having a PMD in the prior comparisons), and younger than 65 years old.

DISCUSSION

The above data compiled from the Harlem Hospital Center Community Health Education and Outreach Department screening programs during 2009-2010 provides specific information about cardiovascular risk factor patterns in Central Harlem and reveals continuing and concerning trends regarding cardiovascular health disparities. The study results correspond to nationally collected data regarding the prevalence of cardiovascular risk factors in a predominantly African-American population which validates the findings and demonstrates the outreach program's ability to accurately identify cardiovascular risk factors in a high-risk community [\[1\]](#). The study also provides population specific data (ethnicity and gender) and identifies particularly high-risk subpopulations (participants without PCPs).

The data suggest that African-American women have the highest rates of obesity and dyslipidemia in this community. This is supported by other research data including the National Health and Nutrition Examination Survey which revealed the prevalence of obesity to be in excess of 30% in most groups with a prevalence of 37.3 % in African- American men and 49.6% among African- American women [\[12\]](#). Several factors such as lifestyle, diet, socioeconomic status and environment have been implicated as etiological

factors for obesity in these populations [\[13\]](#). Reduction in body weight has been shown to significantly contribute to a sustained reduction in blood pressure [\[14\]](#). Among African-Americans total cholesterol levels > 240 mg/dl have been shown to be prevalent in 27% in men and 39% in women [\[15\]](#). Therefore African- American women in Central Harlem will benefit from health programs specifically designed to address obesity and dyslipidemia with goals of weight reduction and increased physical activity.

Based on the above study results, men in Central Harlem, the majority being African-American, will benefit from programs specifically designed to address hypertension and smoking habits with goals of tobacco cessation, dietary changes and increased physical activity. These interventions are particularly urgent given the relative increase in stroke prevalence among African American men. The prevalence of hypertension was found to have increased across all racial and ethnic groups during the period of 1990 to 2000, but African Americans continued to have a substantial higher prevalence [\[16\]](#). The severity, age of onset and worse clinical outcomes are more pronounced in African- Americans [\[17\]](#). The contribution of smoking to the etiology of cardiovascular disease and stroke has been well established in epidemiological studies [\[18\]](#). Data collected by CDC in 2008 show that smoking prevalence is higher in men compared to women (23.1% vs. 18.3%) with a prevalence of 21.3% in African- Americans [\[19\]](#). These significantly higher rates of hypertension and smoking contribute to the increased prevalence of stroke observed for African- American men.

The cohort of community members with limited access to healthcare (no primary care physician) represent an extremely high-risk group that will require urgent intervention strategies to further identify them and subsequently facilitate their entry into the healthcare system. The goal of increasing access to healthcare in Central Harlem reflects current strategies being implemented by the Community Health Education and Outreach Department in conjunction with the Division of Cardiology at Harlem Hospital Center.

Cardiovascular health disparity reduction programs targeting specific populations within at-risk communities must incorporate established

health promotion strategies. The approaches of weight loss, dietary sodium reduction, increased physical activity and modification of whole diet recommended by the United States National High Blood Pressure Education Program Coordinating Committee [20] can be better implemented in Central Harlem by using data from community outreach programs.

CONCLUSIONS

Cardiovascular health disparities remain a concerning clinical reality in the United States, especially for African-Americans, women and people living in traditionally low socioeconomic communities. Addressing these disparities will require a comprehensive, integrated and sustained effort from the healthcare system, including strategies to collect community-based data and discern the specific patterns of risk factor prevalence in high-risk populations. These data can subsequently be used to implement community and population specific and targeted health promotion programs designed to address cardiovascular health disparities. The current study demonstrates that a funded, organized, and systematic approach to community screening has the potential to identify program participants with cardiovascular risk factors. The outreach program at Harlem Hospital Center has established meaningful working relationships with numerous community, church, and government-based organizations throughout Central Harlem and uses these links to maximize their community outreach screening. The patients identified with cardiovascular risk factors are educated by the healthcare providers on the outreach team regarding their risks and advised to seek medical attention when indicated, including referrals to the emergency department, their primary care doctors and for those without PCPs information is provided regarding services provided at Harlem Hospital Center. The participants without PCPs represent the group at highest risk because their medical concerns have not been evaluated, diagnosed or treated and therefore cardiovascular pathology may proceed until a serious adverse event, including stroke or myocardial infarction,

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brings them into the system. The Community Outreach Program and the Division of Cardiology at Harlem Hospital are implementing strategies to help ensure these community members receive medical attention including follow up and monitoring protocols. This study also identifies specific areas of intervention, namely smoking cessation, weight reduction and therapeutic interventions to control hypertension, diabetes and dyslipidemia. Adequate social interventions through increased awareness, education and direct outreach will also help mobilize individuals to receive medical care more regularly. In this context, the utility of Community Health Outreach programs cannot be underestimated. These programs can be instrumental in mobilizing and educating minority populations. These programs also enable data collection which otherwise may not be possible by conventional means.

LIMITATIONS

Community members who voluntarily participate in screening programs may be more concerned and proactive about their health, and, therefore, the full extent of cardiovascular risk factor prevalence may be underestimated. The blood glucose tests are non-fasting and therefore limited in their ability to identify all participants with glucose metabolism concerns, specifically those with ranges from 126-200 mg/dL. Similarly the cholesterol testing was non-fasting and did not fractionate LDL and HDL values, therefore the full range dyslipidemia could not be assessed. The Division of Cardiology and Community Outreach Program are working to secure funding to screen complete lipid panels. We also recognize that a small percentage of participants did not answer all the questions on the survey limiting the completeness of the data set. Despite these limitations, the disparities noted are similar to national trends which provide additional validation to the study results.

CONFLICT OF INTEREST

None of the authors have any conflicts of interest.

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