

# CARDIOMETABOLIC HEALTH IN AFRICAN IMMIGRANTS TO THE UNITED STATES: A CALL TO RE-EXAMINE RESEARCH ON AFRICAN-DESCENT POPULATIONS

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In the 20th century, Africans in Sub-Saharan Africa had lower rates of cardiometabolic disease than Africans who migrated. However, in the 21st century, beyond infectious diseases, the triple epidemics of obesity, diabetes and hypertension have taken hold in Africa. Therefore, Africans are acquiring these chronic diseases at different rates and different intensity prior to migration. To ensure optimal care and health outcomes, the United States practice of grouping all African-descent populations into the “Black/African American” category without regard to country of origin masks socioeconomic and cultural differences and needs re-evaluation. Overall, research on African-descent populations would benefit from a shift from a racial to an ethnic perspective. To demonstrate the value of disaggregating data on African-descent populations, the epidemiologic transition, social, economic, and health characteristics of African immigrants are presented. *Ethn Dis.* 2015;25(3):373-380.

**Key Words:** African Immigrants, African Diaspora, Health Disparities, Cardiometabolic Health, Cardiovascular Disease, Migration

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## INTRODUCTION

The number of African immigrants from Sub-Saharan Africa grew 40-fold between 1960 and 2007, from 35,355 to 1.4 million in the United States.<sup>1,2</sup> There are substantial gaps in literature on cardiometabolic diseases and conditions including diabetes, cardiovascular disease, hypertension and related complications such as chronic kidney disease in African immigrants. Reasons for the paucity of data include the fact that African immigrants in the United States are combined into a single racial category of “Black/African American” along with African Americans and African Caribbeans. There is also little appreciation of the effect of changes in the health status of Africans on the cardiometabolic health of new African immigrants. The World Health Organization report on *Health of Migrants – The Way Forward* suggests that “approaches to manage the health consequences of migration have not kept pace with growing challenges associated with the volume, speed, diversity and disparity of modern migration patterns, and do not sufficiently address the existing health inequities, nor determining factors of migrant health, includ-

ing barriers to access health services.”<sup>3</sup>

In contrast to African immigrants in the Netherlands,<sup>4-7</sup> United Kingdom and Germany,<sup>8</sup> there are very few published studies on the health of African immigrants in the United States. Most studies on African immigrants have focused primarily on infectious diseases including HIV,<sup>9-11</sup> hepatitis B<sup>12</sup> and latent tuberculosis,<sup>13</sup> while non-communicable conditions remain largely understudied.

In this commentary, we present how traditional research paradigms have led to gaps in research, and insufficient understanding of cardiometabolic health disparities in the United States and outline cardiometabolic health differences between African immigrants and African Americans. In addition, strategies for engaging African immigrants in health research are described.

## RACIAL AND ETHNIC TERMINOLOGY: AFRICAN, AFRICAN AMERICAN OR AFRICAN CARIBBEAN?

In this commentary, the term African refers to people of Sub-Saharan African ancestral origins who self-

identify or are identified by others as Africans, but excludes North Africans. African Caribbean refers to people of African-descent who migrated to the United States from the Caribbean islands such as Jamaica, Trinidad and Tobago.<sup>14,15</sup> The term African American describes people of African ancestral origin who self-identify or are identified by others as African American and are descendants of slaves brought to the United States between the 17th and 19th century. African Americans differ in culture, language, health and migration history from Africans who are 21st century immigrants from Africa or the Caribbean islands.

### Disentangling Race and Ethnicity in Health Research

The concepts of *race* and *ethnicity* are not anthropologically or scientifically based so a distinction between these two concepts is necessary.<sup>15-17</sup> *Race* is a social classification assigned to people based on physical appearance.<sup>18,19</sup> While *ethnicity* is a social classification based on shared cultural values, meanings, customs; *ethnicity* is usually self-claimed or developed in relation to feelings of belonging to a chosen community.<sup>18,19</sup>

Cardiometabolic health disparities between African Americans and Whites in the United States have been well-documented with the consensus that African Americans bear a disproportionate higher burden of cardiometabolic disease than White Americans.<sup>20,21</sup> However, data from African Americans, African Caribbeans, and African immigrants, all of whom may share the “Africa” designation, should be disaggregated due

to differences in culture, migration histories, and genetic admixtures, which are important determinants of health.<sup>14,22,23</sup> The differences between these three major subgroups of African-descent populations are often not considered. In particular, researchers examine cardiometabolic health disparities from a racial lens rather than ethnic lens by primarily exploring “Black vs White” differ-

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ences and excluding foreign-born Blacks or the aggregating African-descent populations.<sup>24</sup> This practice is reinforced by the US Census as all African-descent populations independent of origin are combined into a single category.<sup>24</sup> For example, in the 2010 US Census, respondents were given the option to self-identify as: White, Black/African American, Hispanic/Latino/Spanish origin,

American Indian/Alaska Native, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Native-Hawaiian, Guamanian or Chamorro, Samoan and Native-Hawaiian/other Pacific Islander or, “some other race.”<sup>25</sup> The assumption of the Black/African American category was that it represents a single homogenous group. Yet, African Americans have resided in the United States for several hundred years and have subsequently developed unique cultural traditions as well as genetic admixture,<sup>26</sup> which might shape their health outcomes differently than the recent African immigrants. Furthermore, African immigrants often want to hold on to their identity as Africans and not self-identify as “Blacks/African Americans.”<sup>27</sup> Therefore, African immigrants either may not participate in studies about the health status of “Blacks/African Americans” or, if they do, their unique characteristics are not detected because of data aggregation. In studies of Asian and Hispanic immigrants, acculturation has been associated with cardiometabolic disease risk and it is likely that the process of acculturation in recent African immigrants may differ considerably from that of African Americans.

### EPIDEMIOLOGIC TRANSITION IN SUB-SAHARAN AFRICA

To improve our understanding of the cardiometabolic health of African immigrants, it is important to consider the “epidemiological transition,” which is underway in Sub-

Saharan Africa. The epidemiological transition has been characterized as shifts in disease and mortality patterns from infectious disease to non-communicable disease as the major causes of morbidity and mortality.<sup>28</sup> In the decades between the 1950s and 1990s, Sub-Saharan Africa experienced high rates of infectious diseases while simultaneously experiencing relatively low rates of non-communicable diseases such as hypertension, diabetes and cardiovascular disease.<sup>29</sup> Recent changes in social and economic factors, epidemiology and nutrition have together resulted in a superimposition of non-communicable conditions such as hypertension, diabetes and overweight/obesity<sup>29</sup> on infectious diseases. Systematic reviews and meta-analyses<sup>30-33</sup> have supported this finding of a growing prevalence of cardiometabolic disease risk factors in Sub-Saharan Africa. Hence, recent African immigrants may have higher baseline risk for cardiometabolic disease than those who migrated in the past decades. Therefore, they may be in a different stage of the epidemiological transition that may lead to differences in cardiometabolic disease risk compared with African Americans who have resided in the United States for several centuries.

### **SOCIODEMOGRAPHIC OVERVIEW OF AFRICAN IMMIGRANTS IN THE UNITED STATES**

Between 1960 and 2007, the size of the African immigrant population increased substantially in Texas

(111%), Virginia (110%), Maryland (100%), California (40%), and New York (36%) in comparison to other states.<sup>1</sup> About 114,000 African immigrants resided in the Washington DC metropolitan area in 2005, accounting for 11% of the area's total immigrant population.<sup>2</sup> Almost a decade later, we believe that population has likely doubled. In terms of population size, the top countries of origin for immigrants to the United States are Nigeria, Ethiopia, Ghana, and Kenya.<sup>1</sup> Hence, health care providers in these geographical locations are more likely to encounter African immigrants but may be ill-equipped to address their risk for cardiometabolic disease in a culturally appropriate way. Likewise, in studies of African-descent populations, African immigrants should be purposively sampled from major cities to better understand their cardiometabolic health.

African immigrants in the United States arrive through different pathways, including permanent residence through family ties, refugee status, student visa and diversity visa lottery program, which provides 55,000 visas each year to underrepresented countries. In terms of socioeconomic status, African immigrants in the United States are a highly educated immigrant group.<sup>25</sup> In 2009, 41.7% of African-born adults had a bachelor's degree or higher compared with 28.1% of US-born adults and 26.8% of all foreign-born adults.<sup>1,34</sup> However, the high level of education in African immigrants often does not translate into higher incomes as is seen in US-born residents.<sup>35</sup> In 2007, African-born men (84%)

and women (66%) were more likely to participate in the labor force than all foreign-born men (79%) and women (54.8%).<sup>1</sup> They are also more likely to speak English as a first or second-language than Asian and Hispanic immigrants because of British colonization of several African countries.<sup>1,35</sup> In 2009, more than 70% of African immigrants reported speaking only English or speaking English "very well."<sup>34</sup> French-speaking Africans (who also speak English) are also beginning to migrate to the United States rather than France and are primarily from Cameroon, Ivory Coast and Senegal.<sup>36</sup> These important differences in social and economic factors likely influence cardiometabolic health and support the need to disaggregate data.

### **VARIATION IN HEALTH STATUS AMONG AFRICAN-DESCENT POPULATIONS**

A few studies have explored the variation in the health status of African-descent populations by ethnicity and country of origin. Fang and colleagues<sup>37</sup> studied the association between birthplace and cardiovascular disease mortality in New York City and found that Blacks (US-born and Caribbean-born) had significantly higher mortality than Whites. However, stratified analyses by birthplace revealed that Caribbean-born Blacks had significantly lower rates of mortality than Whites and Southern-born Blacks, which emphasizes the heterogeneity of the African-descent population in the United States. In a study of

the role of ethnicity on the health of Blacks, Griffith and colleagues<sup>38</sup> also observed that Caribbean-born Blacks had the best self-rated physical health status and US-born Caribbean Blacks had the worst; this finding remained significant even after controlling for self-reported depressive symptoms. In a cross-national comparison of blood pressure in West African populations in Africa, the Caribbean and the United States, a gradient of blood pressure was observed with consistently higher blood pressures reported in those residing in the United States.<sup>39</sup> Similar differences have also been observed in Europe. For example, Agyemang and colleagues have found that Dutch Africans had higher mean diastolic blood pressures than their English African and English Caribbean counterparts.<sup>40</sup> Together, these studies suggest that the assumption that all African-descent populations in the United States have comparable cardiometabolic health should be re-examined.

Inadequate health care access is associated with sub-optimal health outcomes and African immigrants report difficulties with health care access including health care system complexity and resources as well as cost of care.<sup>41</sup> Similar to other immigrants, they are more likely to have inadequate health insurance coverage and report utilization of hospital emergency departments as their main source of health care.<sup>41</sup> It remains to be seen what impact the Affordable Care Act (ACA) will have on health care access in this population. However, it is important to note that undocumented

immigrants are not eligible to obtain health coverage through the ACA or federally funded assistance programs. Hence, undocumented African immigrants may continue to be uninsured despite the passage of this new legislation.

### **VARIATION IN CARDIOMETABOLIC HEALTH BETWEEN AFRICAN AMERICANS AND AFRICAN IMMIGRANTS**

To determine if data were available on cardiometabolic health in African immigrants living in the United States, a literature review was conducted and four studies were identified: one by Osei et al<sup>42</sup> and three by a co-author of this commentary.<sup>43-45</sup> In 1995, Osei et al<sup>42</sup> evaluated insulin resistance, beta-cell function and glucose effectiveness in 30 African immigrants (Ghanaians) and 68 African Americans. No differences in the metabolic pathways that lead to diabetes and cardiovascular disease were identified. However, the study was not designed to determine if differences in risk factors existed between African Americans and African immigrants.

In the first study of the “Africans in America cohort,” Ukegbu et al<sup>43</sup> asked whether the metabolic syndrome would be an effective screening tool to detect metabolic risk in either African immigrant or African American men. The metabolic syndrome has five features and the diagnosis is made if any three are present.

The five parameters are: hypertriglyceridemia, low high-density lipoprotein-cholesterol, central obesity, hypertension and fasting hyperglycemia. It was determined that the prevalence of metabolic syndrome was similar in the African immigrants ( $n=39$ ) and African Americans ( $n=56$ ), but African immigrant men were more likely to be hypertensive and have diabetes and central obesity. Therefore, it was concluded that the metabolic syndrome was not an effective screening tool for cardiometabolic disease in men of African descent. In addition, this is the first study that demonstrated that African immigrants had worse cardiometabolic health than African Americans.

In the second study of the “Africans in America cohort,” Yu et al compared the efficacy of triglyceride-based screening tests to detect cardiometabolic disease in African immigrant men ( $n=80$ ) and African American men ( $n=75$ ).<sup>44</sup> This investigation found that <10% of the African American and African immigrant men with cardiometabolic disease had elevated triglyceride levels. Therefore, triglyceride-based screening tests appear to perform poorly in men of African descent, independent of country of origin. Nonetheless, as shown in the earlier study, the African immigrant men had higher rates of hypertension, diabetes and pre-diabetes than African American men, although they had a lower prevalence of smoking and obesity than the African American men.

Therefore, in the third study of the “Africans in America cohort,”

O'Connor et al directly compared cardiometabolic health in 138 African immigrant men and 76 African American men.<sup>45</sup> Again, they determined that the African immigrants were more likely to be hypertensive and have diabetes or pre-diabetes than the African Americans. Interestingly, the African immigrant men were less obese, less likely to smoke and more likely to be both married and college graduates than the African American men. All of these factors should have lowered their risk of cardiometabolic disease. However, the African immigrant men were also less likely to have health insurance and less likely to exercise. Furthermore, O'Connor et al postulated that a factor contributing to worse cardiometabolic health in the African immigrants was rapid weight gain after immigration. Importantly, this weight gain was not sufficient to equalize the rates of obesity in African immigrant and African American men, but the speed of weight gain particularly in the first two years after arrival in the United States may contribute to the adverse cardiometabolic profile observed in the African immigrants.

These three studies of the "Africans in America cohort" have an increasingly larger sample size and, yet, the finding of worse cardiometabolic health in African immigrant men than African American men persists. Nonetheless, larger studies that include women are warranted to increase the external validity of these findings. Together, these studies suggest that the "healthy immigrant effect"<sup>46,47</sup> that pre-sup-

poses that immigrants are healthier than US-born Americans should be re-evaluated in African immigrants. Our findings are also aligned with Schneiderman et al's call to re-examine the "healthy immigrant effect in Hispanic immigrants."<sup>48</sup>

### STRATEGIES FOR ENGAGING AFRICAN IMMIGRANTS IN CARDIOMETABOLIC HEALTH RESEARCH

In working with under-represented communities, sociocultural differences may hamper recruitment efforts and effective strategies

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must be developed to successfully overcome these barriers. Particularly, recent immigrants may be unfamiliar with mainstream biomedical concepts<sup>49</sup> and may not have participated in research due to limited research capacity in Sub-Saharan Af-

rica. However, African immigrants have reported that they would participate in research that: a) involved collaborations with African-immigrant communities; b) had potential benefit for Africans in the United States and in Africa; and c) provided assurances of confidentiality.<sup>50</sup> We therefore present evidence-based strategies for engaging African immigrants in research based on our research experiences.

In the community-based setting, the "Afro-Cardiac Study," which was conducted by a co-author of this review, has revealed the following: 1) engaging community leaders, in particular, religious leaders, in the recruitment process is an important strategy to improve participation due to the inherent distrust reported in many ethnic minorities; 2) Religious institutions, such as churches, are viable settings to recruit and engage a representative sample of African immigrants due to non-discriminatory practices on the basis of gender, ethnicity and socioeconomic status; 3) the data collection team should be diverse and reflect the population being studied.

In the clinic-based setting, research from the "Africans in America cohort" suggests that the following considerations need to be taken into account: 1) newspapers are an effective strategy for recruiting African immigrants in the Washington, DC metropolitan area; and 2) offering a monetary incentive that appropriately compensates participants for their time and inconvenience may reduce transportation barriers that African immigrants may face in attending the required site visits.

## CONCLUSION

African immigrants are a growing group of the US population. Reflecting the epidemiological transition in Sub-Saharan Africa, these African immigrants may have poorer cardiometabolic health than those who migrated to the United States earlier. Traditionally, all African-descent populations have been combined into the racial group of Black/African American although differences in culture, health and socio-economic characteristics have been documented. Preliminary data from the studies reviewed suggest that African immigrants may have poorer cardiometabolic health than African Americans, which supports the disaggregation of data on African-descent populations. Additional studies are needed to explore social, behavior and cultural factors that may influence cardiometabolic health in African immigrants and provide opportunities to intervene. Recruitment strategies should be implemented to ensure that African immigrants are adequately represented in research on African-descent populations. To address the research gaps in this population, we need more opportunities for researchers, health care providers, members of the African immigrant community to collaboratively conduct community-engaged research.

### AUTHOR CONTRIBUTIONS

#### Research concept and design:

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**Manuscript draft:** Commodore-Mensah, Dennison Himmelfarb, Agyemang, Sumner

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## Cardiometabolic Health in African Immigrants - *Commodore-Mensah et al*

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