Foreign- Born Blacks Experience Lower Risk of Obesity but Higher Risk of Type 2 Diabetes than US-Born Blacks in NYC

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Abstract:

Research is limited on the health of foreign-born Blacks (FBBs), who are often grouped with African Americans. This study compared obesity and diabetes odds in FBBs and US-born Blacks (USBBs) in NYC. Analyzing the 2009–2013 NYC Community Health Survey (3701 FBBs and 6297 USBBs), weighted multivariate logistic regression examined odds of obesity and diabetes, adjusting for age, gender, education, income, marital status, children < 18, BMI (for diabetes only) and duration of residence. FBBs had lower odds of obesity [OR 0.62 (95% CI 0.54, 0.72)] and greater odds of diabetes [OR 1.24 (95% CI 1.01, 1.52)] compared to USBBs. FBBs had 1.4 times the odds of diabetes at overweight status, compared to USBBs [OR 1.40 (95% CI 1.01, 1.95)]. Living in the US ≥ 10 years was not associated with odds of obesity and diabetes. Future research should seek to uncover unique risk profiles of sub-ethnic groups in the African diaspora.

Keywords: Obesity | Diabetes | Black | Immigrant | Duration of residence

Article:

Background

Between 2000 and 2013, non-Hispanic Black (hereafter referred to as Black) immigration to the US increased by 56%. By 2013, 8.7% of the US Black population or 3.8 million people were foreign-born [1]. In 2013, 36% of all foreign-born Blacks (FBBs) were from Africa, and 60% hailed from the Caribbean [1]. In New York City (NYC), 671,333 Black African and Caribbean immigrants constitute 23% of the entire foreign-born population [2]. In addition, the 8th largest and fastest growing group of foreign-born residents in NYC is West Africans (76,710), with a population growth of 60% since 2000 [2]. The US Census estimates that, by 2060, 16.5% of the US Black population will be foreign-born [3].

Limited evidence shows that FBBs and US-born Blacks (USBBs) may have different health profiles. A national cross-sectional study (National Health Interview Survey 2000–2013) showed that the odds of obesity were significantly lower for Caribbean (OR 0.51, 95% CI 0.44, 0.58) and African (OR 0.41, 95% CI 0.34, 0.5) FBBs compared to USBBs [4]. Similar to obesity, FBBs were 25% less likely to have diabetes compared to USBBs (Prevalence = 8.9 vs. 11.8%), though odds of diabetes were higher among FBBs of Caribbean versus African origin [5]. A recent study from NYC showed that age-standardized obesity prevalence was significantly lower for Caribbean (28.7%) and African FBBs (20.9%) compared to USBBs (36.4%). In contrast, the same study showed no significant difference in diabetes prevalence between Caribbean FBBs (14%), African FBBs (13%) and USBBs (13%). However, these analyses did not adjust for socioeconomic, demographic and acculturation variables [6].

Of note, contrary to findings in other immigrant groups, duration of residence in the US has not consistently been found to be associated with either BMI [7, 8, 9] or diabetes among FBBs, suggesting a possibly lower level of dietary acculturation among FBBs in particular [9]. However, when compared to FBBs living in the US for < 5 years, FBBs living in the US for ≥ 15 years experienced increased obesity odds (OR 1.51, 95% CI 1.10, 2.08) [4].

This study sought to investigate how the odds of obesity and diabetes differed between FBBs and USBBs in NYC, using 5 years of data from the NYC Community Health Survey (CHS), 2009–2013. We hypothesized that FBBs would have lower odds of obesity and diabetes than the USBBs; the relationship between diabetes and BMI would be similar in FBBs and USBBs; and sought to explore whether duration of residence was associated with odds of obesity and diabetes.

Methods

Five years of data from the NYC CHS from 2009 to 2013 were used to examine the relationship between nativity, obesity and diabetes in Black population groups in NYC. NYC CHS is a cross-sectional telephone survey with an annual stratified randomized sample of approximately 8500 adults ≥ 18 years of age. Sampling is done from land lines and households with only cell phones from the five boroughs in NYC. Computer-assisted telephone interviews are administered in English, Spanish, Russian, and Cantonese/Mandarin [10].

The study was deemed exempt from review by the City University of New York institutional ethics review committee.

Participants

The NYC Department of Health (DOH) provided a de-identified and publicly available dataset and sample weights for combined years 2009–2013, with a total sample of 44,886 adult New Yorkers ≥ 18 years of age [10].

Measures

Obesity was defined as BMI $\geq$ 30 kg/m^2 (yes/no), and was calculated from self-reported height and weight. Diabetes was self-reported (i.e., ever told by a medical professional that the person had diabetes, yes/no). NYC CHS questions did not distinguish between type 1, type 2 and gestational diabetes. Women who indicated only having diabetes while pregnant were included in the "no" category. Type 1 diabetes is also relatively rare in African Americans [11], but little is known about prevalence in African and Caribbean Blacks [12, 13, 14].

Race was self-reported and defined as non-Hispanic White, non-Hispanic Black, non-Hispanic Asian/Pacific Islander, Hispanic, and non-Hispanic Other. Only those who self-identified as non-Hispanic Black were included in this analysis. Nativity was defined as FBB versus USBB where FBB self-identified as Black and born outside the US, and USBB self-identified as Black and born in the US or US territories. Total Black was the total of FBBs and USBBs. Time in the US was defined as time lived permanently in the US, dichotomized as < 10 or $\geq$ 10 years. Age was categorized as 18–24, 25–44, 45–64 years and 65+ years for descriptive statistics and used as a continuous variable in logistic regression models. Gender was defined as female or male. Education was dichotomized as less than high school versus high school or more, and household income was dichotomized as < $20,000 versus $\geq$ $20,000. Marital status was defined as married or living with a partner, versus never married, widowed or divorced. Children < 18 in the home was defined as having one or more children < 18 years of age living in the home (yes/no). In further analysis of diabetes stratified by BMI, BMI was categorized as underweight, BMI < 18.5 kg/m^2, normal weight, BMI 18.5 to < 25 kg/m^2, overweight, BMI 25 to < 30 kg/m^2 and obese, BMI $\geq$ 30 kg/m^2.

Analysis

The analyses were weighted to account for differences in selection probabilities and non-response. All weights were post-stratified to the NYC adult population based on age, sex, race/ethnicity, phone type and borough of residence based on estimates from the 2010 US Census [10].

Descriptive statistics was computed for relevant characteristics of the combined Black population including FBBs and USBBs (total Black population). Chi square analyses assessed proportional differences in sample characteristics between FBBs and USBBs.

Weighted multivariate logistic regression models predicted odds of obesity and diabetes for FBBs and USBBs. Covariates in all models included age, gender, education, income, marital status, children < 18 in the home and BMI (diabetes only).

The sequence of regression models (parallel models with obesity or diabetes as outcome) is as follows. Model 1 examined the relationship between nativity and obesity or diabetes, adjusting for age, gender, BMI (diabetes only), and socioeconomic and family variables. Models 2 and 3 examined the association between the outcomes and covariates among FBBs and USBBs separately to assess the effect of risk factors. Model 4 added the effect of time in the US for FBBs only.

Stratifying by four BMI categories, post-hoc chi square analyses assessed the prevalence of diabetes by nativity. Additional stratified multivariate logistic regression models adjusted for age, gender, education, income, marital status and presence of children < 18 in the home also assessed odds of diabetes for FBBs vs. USBBs by the four BMI categories.

Table 1. Characteristics of the New York City Black population; New York City Community Health Survey (CHS) 2009–2013

	Total Black[a] weighted %[c]	**Foreign-born Black weighted %[c]**	**US-born Black weighted %[c]**	**p Value**
Population	n = 9998[b]	n = 3701[b]	n = 6297[b]	
	21.9%	41.7%	58.3%	
Exposure variables				
Nativity				
Foreign born	41.7%	100%	–	
US-born	58.3%	–	100%	
Age				
18–24	14.7%	8.4%	19.4%	< 0.001
25–44	37.7%	37.9%	37.3%	
45–64	33.4%	39.5%	29.1%	
65+	14.2%	14.2%	14.3%	
Gender				
Female	57.7%	58.5%	57.1%	0.377
Male	42.3%	41.5%	42.9%	
Education				
Less than high school	14.5%	15.0%	14.2%	0.460
High school or more	85.5%	85.0%	85.8%	
Income				
< $20K	46.5%	47.1%	46.0%	0.050
≥ $20K	44.0%	42.1%	45.3%	
Don't know	9.5%	10.8%	8.6%	
Marital status				
Married/living w. partner	33.2%	45.1%	24.6%	< 0.001
Never married/divorced/widowed	66.8%	54.9%	75.4%	
Children < 18 in the home				
Yes	40.2%	43.4%	38.1%	< 0.001
No	59.8%	56.6%	61.9%	
Time in the US (FB only)				
< 10 years		20.7%		
≥ 10 years		79.3%		
Outcome variables				
Diabetes				
Yes	13.0%	14.6%	11.9%	0.007
No	87.0%	85.4%	88.1%	
BMI				
Obese	32.5%	28.7%	35.3%	< 0.001
Overweight	35.2%	37.7%	33.4%	
Normal weight	30.7%	32.2%	29.6%	
Underweight	1.6%	1.4%	1.6%	

[a] Total Black is the combination of FBB and USBB, 22% of the total NYC population

[b] Sample sizes are based on unweighted data

[c] All weighted proportions reflect New York City population estimates

Column totals may not total 100 due to rounding

Statistical Analysis Software (SAS) version 9.4 (Cary, NC) was used for all statistical analyses. Statistical significance was considered at $p < 0.05$.

Results

Table 1 provides descriptive statistics in total Blacks, FBBs and USBBs. Of the total weighted population 22% self-identified as Black, of which 41.7% were FBB and 58.3% were USBB. FBBs and USBBs were significantly different on all characteristics except gender, education and income. Women represented a majority of the sample, 58.5% of FBBs and 57.1% of USBBs, respectively. The mean age for all Blacks was 44.2 years and similar between FBBs (46.5) and USBBs (42.6). FBBs were more likely to be between the ages 45 and 64 (39.5 vs. 29.1%) and USBBs were more likely to be between the ages of 18 and 24 (19.4 vs. 8.4%). FBBs were more likely to be married or living with a partner than USBBs (45.1 vs. 24.6%), and more likely to have children < 18 in the home than USBBs (43.4 vs. 38.1%). The majority of FBBs (79.3%) had been living in the US for ≥ 10 years.

Odds of Obesity

FBBs had lower mean BMI than USBBs, 27.7 (95% CI 27.4, 28.0) and 28.6 (95% CI 28.3, 28.9) kg/m^2, respectively ($p < 0.001$). FBBs were significantly less likely to be obese than USBBs (28.7 vs. 35.3%, $p < 0.001$), but FBBs were more likely to be overweight than USBBs (37.7 vs. 33.4%, $p < 0.001$).

Table 2 shows the logistic regression results with obesity as the outcome. Compared to USBBs, FBBs had significantly lower odds of obesity [OR 0.62 (95% CI 0.54, 0.72)] after adjusting for covariates (Table 2, Model 1). In all analyses age was associated with increased odds of obesity similarly for both FBBs and USBBs, increasing odds by 1.01 per year of age. (Table 2, Model 1–4).

When considering gender, FBB women were more than twice as likely to be obese as FBB men [OR 2.26 (95% CI 1.74, 2.93)]. Similarly, USBB women had almost twice the odds of obesity compared to USBB men [OR 1.72 (95% CI 1.42, 2.09)] (Table 2, Model 2–3).

Lower income was significantly associated with increased obesity odds in the total Black population and among FBBs (OR 1.19–1.47, Table 2 Models 1 and 2). However, among USBBs, income was not associated with odds of obesity (Table 2, Model 3).

Being married or living with a partner was associated with increased odds of obesity when examining the total Black population [OR 1.27 (95% CI 1.09, 1.48)], which was stronger among USBBs [OR 1.40 (95% CI 1.14, 1.70)]. There was no significant association between marital status and obesity among FBBs.

Odds of Diabetes

NYC CHS data showed that compared to USBBs the prevalence of self-reported diabetes was significantly higher among FBBs (14.6 vs. 11.9%, p = 0.007, Table 1) and greater adjusted odds of diabetes [OR 1.24 (95% CI 1.01, 1.52), Table 3, Model 1].

Table 2. Obesity odds foreign-born Blacks (FBB) and US-born Blacks (USBB) in NYC, logistic regression, weighted

Risk factors	**NYC CHS OR (95% CI) Model 1**	**NYC CHS OR (95% CI) Model 2**	**NYC CHS OR (95% CI) Model 3**	**NYC CHS OR (95% CI) Model 4**
Nativity				
Foreign-born	0.62 (0.54, 0.72)***	FBB ONLY	USBB ONLY	FBB ONLY
US-born	Referent			
Age	1.01 (1.01, 1.02)***	1.01(1.01, 1.02)***	1.01 (1.01, 1.02)***	1.01 (1.00, 1.02)***
Gender				
Female	1.91 (1.64, 2.22)***	2.26 (1.74, 2.93)***	1.72 (1.42, 2.09)***	2.24 (1.73, 2.91)***
Male	Referent	Referent	Referent	Referent
Education				
Less than high school	1.02 (0.83, 1.24)	1.01 (0.74, 1.39)	1.00 (0.77, 1.30)	1.04 (0.70, 1.33)
High school or more	Referent	Referent	Referent	Referent
Income				
< $20K	1.19 (1.03, 1.38)***	1.40 (1.10, 1.78)***	1.09 (0.90, 1.31)	1.41 (1.10, 1.80)***
≥ $20K	Referent	Referent	Referent	Referent
Marital status				
Married/living w. partner	1.27 (1.09, 1.48)***	1.13 (0.89, 1.44)	1.40 (1.14, 1.70)***	1.11 (0.87, 1.41)
Never married/divorced/widowed	Referent	Referent	Referent	Referent
Children < 18 in the home				
Yes	1.09 (0.93, 1.28)	1.01 (0.78, 1.31)	1.16 (0.94, 1.42)	1.03 (0.79, 1.33)
No	Referent	Referent	Referent	Referent
Time in the US				
< 10 years				Referent
≥ 10 years				1.37 (0.95, 1.96)

***p < 0.001; **p < 0.01; *p < 0.05

Table 3 shows the logistic regression results with diabetes as the outcome. Odds of diabetes increased significantly with age for both FBBs and USBBs, increasing by 1.06–1.07 per year of age. (Table 3, Models 1–4).

Among all Blacks odds of diabetes were significantly increased in those with income of < $20K [OR 1.25 (95% CI 1.01, 1.53)]. Among USBBs, those with low income had increased odds of diabetes [OR 1.33 (95% CI 1.01, 1.74), p < 0.001].

Odds of Diabetes by BMI Status

Compared to normal weight, both overweight and obesity were associated with increased odds of diabetes in total Blacks [OR 1.69 (95% CI 1.27, 2.25) and OR 3.46 (95% CI 2.61, 4.59), respectively, Table 3, Model 1]. Underweight was associated with significantly lower odds of diabetes [OR 0.30 (95% CI 0.11, 0.85)]. Among FBBs overweight was associated with increased odds of diabetes [OR 1.51 (95% CI 0.98, 2.44), Table 3, Model 2] although not statistically significant (p = 0.06). Obesity status was associated with statistically significantly increased odds of diabetes [OR 2.76 (95% CI 1.76, 4.33), p = 0.047]. Underweight was associated with significant and dramatically lower odds of diabetes [OR 0.08 (95% CI 0.01, 0.65)] among FBBs.

For USBBs only obesity was associated with significantly increased odds of diabetes [OR 4.29 (95% CI 2.98, 6.16)].

Table 3. Diabetes odds foreign-born Blacks and US-born Blacks in NYC, logistic regression, weighted

Risk factors	**NYC CHS OR (95% CI) Model 1**	**NYC CHS OR (95% CI) Model 2**	**NYC CHS OR (95% CI) Model 3**	**NYC CHS OR (95% CI) Model 4**
Nativity				
Foreign-born	1.24 (1.01, 1.52)***	FBB ONLY	USBB ONLY	FBB ONLY
US-born	Referent			
Age	1.06 (1.06, 1.07)***	1.07 (1.06, 1.08)***	1.06 (1.05, 1.07)***	1.06 (1.05, 1.08)***
Gender				
Female	0.95 (0.77, 1.17)	0.88 (0.65, 1.20)	1.02 (0.77, 1.35)	0.88 (0.64, 1.21)
Male	Referent	Referent	Referent	Referent
Education				
Less than high school	1.03 (0.78, 1.37)	1.03 (0.67, 1.60)	1.03 (0.71, 1.47)	0.89 (0.76, 1.04)
High school or more	Referent	Referent	Referent	Referent
Income				
< $20K	1.25 (1.01, 1.53)***	1.16 (0.84, 1.58)	1.33 (1.01, 1.74)***	1.10 (0.79, 1.52)
≥ $20K	Referent	Referent	Referent	Referent
Marital status				
Married/living w. partner	1.05 (0.85, 1.29)	1.10 (0.80, 1.50)	1.00 (0.75, 1.32)	1.09 (0.80, 1.50)
Never married/divorced/widowed	Referent	Referent	Referent	Referent
Children < 18 in the home				
Yes	1.01 (0.79, 1.28)	0.98 (0.69, 1.38)	1.03 (0.75, 1.43)	1.01 (0.71, 1.43)
No	Referent	Referent	Referent	Referent
BMI kg/m ^{2}				
Underweight < 18.5	0.30 (0.11, 0.85)***	0.08 (0.01, 0.65)***	0.60 (0.20, 1.80)	0.08 (0.01, 0.69)***
Normal weight 18.5 to < 25	Referent	Referent	Referent	Referent
Overweight 25 to < 30	1.69 (1.27, 2.25)***	1.51 (0.98, 2.33)	1.92 (1.32, 2.78)	1.54 (1.00, 2.38)***
Obese ≥ 30	3.46 (2.61, 4.59)***	2.76 (1.76, 4.33)***	4.29 (2.98, 6.16)***	2.64 (1.67, 4.16)***
Time in the US				
< 10 years				Referent
≥ 10 years				1.64 (0.92, 2.93)

***p < 0.001; **p < 0.01; *p < 0.05

Figure 1 shows the crude prevalence of diabetes by BMI categories in FBBs versus USBBs. There is a dose–response relationship between BMI and odds of diabetes in both groups in that as BMI increased so did the odds of T2D diabetes. Crude diabetes prevalence was higher for FBBs vs. USBBs at normal weight (8.6 vs. 5.3%), overweight (14.2 vs. 10.7%) and obesity (22.7 vs. 19.0%) levels. Further, comparing FBBs to USBBs, the odds of diabetes was 1.66 (95% CI 1.00, 2.82) (p = 0.060) at normal BMI and 1.40 (95% CI 1.00, 1.95) (p = 0.047) at overweight BMI. (Fig. 2).

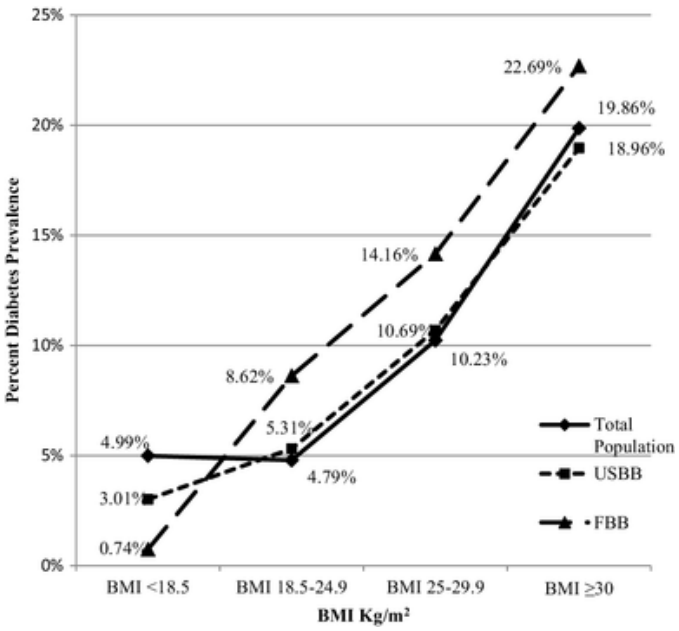

Fig. 1. Prevalence of diabetes in New York City, total population, foreign born Black (FBB) and US-born Black (USBB) New Yorkers. NYC Community Health Survey, 2009–2013. Crude prevalence estimates are weighted to the NYC population

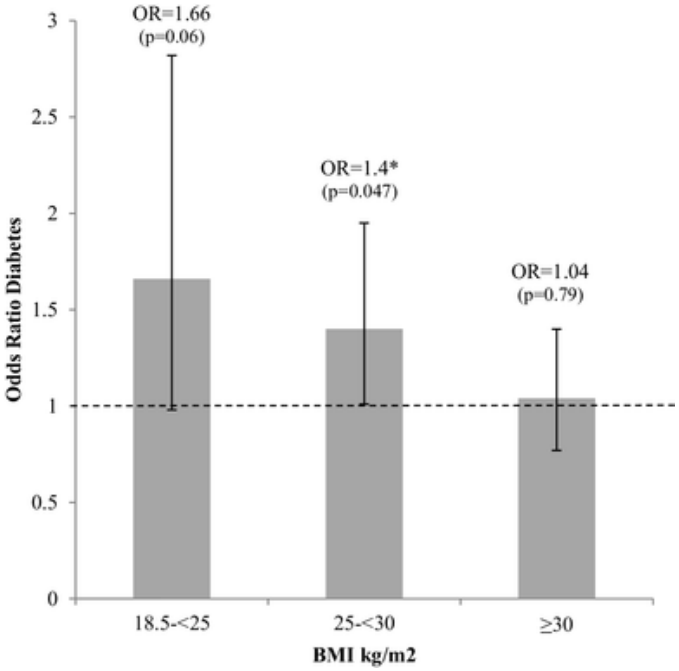

Fig. 2. Odds of diabetes at normal, overweight and obese BMI. Foreign-born Black (FBB) versus US-born Black (USBB) New Yorkers, NYC Community Health Survey, 2009–2013. Estimates are weighted to the NYC population and adjusted for age, gender, income, education, marital status and children in the home. *P < 0.05

Odds of Obesity and Diabetes by Duration of Residence

Among FBBs, time in the US ≥ 10 years was not significantly associated with odds of obesity compared to time in the US < 10 years. Furthermore, time in the US ≥ 10 years was not significantly associated with odds of diabetes for FBBs.

Discussion

To the best of our knowledge, this is the first study to examine the odds of obesity and diabetes in FBBs versus USBBs living in NYC. Obesity prevalence was lower in FBBs compared to USBBs; however, overweight was significantly higher in FBBs. Contrary to the study hypothesis, FBBs had higher odds of diabetes than USBBs in NYC. Analyses also showed different patterns of risk factors in relation to obesity and diabetes outcomes between FBBs and USBBs.

Obesity odds increased predictably with age in both FBBs and USBBs. Similar to previous research, odds of obesity was not associated with time in the US among FBBs [9]. Our findings indicate that for FBBs living in the US for ≥ 10 years was not significantly associated with odds of obesity relative to < 10 years in the US (lack of statistical significance may be due to the small proportion of FBBs living in the US < 10 years). However, the significantly higher prevalence of overweight among FBBs than USBBs may demonstrate a new trend of transition from normal weight to overweight specifically in FBBs from Africa [15, 16, 17] and the Caribbean [18]. Furthermore, the effects of globalization, nutrition transition [19] and "remote acculturation" [20] may contribute to increasing BMI in populations living in both Africa and the Caribbean prior to immigration to the US. Further research with larger samples of new immigrants is warranted.

A striking finding was the greater odds of obesity for lower income FBBs, with no difference in odds by income observed among USBBs. In the US, poverty is associated with greater exposure to obesogenic environments [21], however, the association between income and obesity prevalence is not significant in African American women and negative in African American men [22, 23]. Historically higher income groups in African and Caribbean countries have had the highest odds of obesity, but our findings may mirror recent changes in the countries of origin where odds of obesity are increasing in low-income groups [24, 25, 26].

This study found a wide disparity in diabetes prevalence between FBBs and USBBs. The high burden of self-reported diabetes of 14.6% among FBBs, compared to 11.9% among USBBs, exceeds previously reported 12.1% prevalence among all NYC Blacks [27] but aligns with more recent rates among Caribbean FBBs (14%), African FBBs (13%) and USBBs (13%) [6]. Most concerning is the hidden epidemic of diabetes among FBBs obscured by classifying all respondents of African origin as Black or African American. It is important to note that NYC CHS data represent prevalence of self-reported diabetes only and that the two population groups are likely to experience even higher rates of diabetes as an estimated 30% of diabetes is undiagnosed [27].

Contrary to national findings and our initial hypothesis, FBBs were found to have increased odds of diabetes despite lower odds of obesity than USBBs. However, there is emerging clinical research showing that African FBB men have higher odds of diabetes, despite lower mean BMI

and lower waist circumference compared to USBB men [16]. In addition, diabetes prevalence in Black populations in the Caribbean, one of the two main regions of origin of FBBs in NYC [2], is estimated to be 10–17% [14], which is higher than the US national prevalence of diabetes among FBBs (8.9%). Thus, the patterns of migration in NYC may partially explain different findings between this study and that of national surveys. It is noteworthy that when compared to USBBs, the heightened risk of diabetes was observed at normal and overweight but not obese weight status, although statistically significant only for overweight. This suggests that there may be epigenetic factors that contribute to the susceptibility of diabetes among FBBs at relatively lower weight, such as those suspected for Asian Americans [28, 29]. However, diabetes prevention and diagnosis may also be associated with health insurance, healthcare access and utilization which we were not able to address. Health insurance access has previously been reported as lower among FBB men compared to USBB men [30], and this may affect rates of diabetes diagnosis and management differently between FBBs and USBBs. Moreover, environmental factors such as changes in dietary behaviors and physical activity along the trajectory of migration warrants further research.

One caution in the interpretation of our findings is that immigrants from the Caribbean and West Africa have historically returned home for retirement [31, 32] and high diabetes prevalence among older FBBs in the US may be associated with factors unique to transnational immigration. Healthy transnationals may return to their country of origin, whereas FBBs with diabetes diagnoses may remain in the US for diabetes treatment and better access to medical care [33, 34]. This may be the reverse effect of what has been termed the “salmon bias” specifically observed in Hispanic immigration, where less healthy immigrants return to their country of origin, and healthy immigrants remain in the US [35].

This is one of the largest population-based epidemiological studies comparing FBBs and USBBs. The magnitude of the NYC CHS dataset allowed for the examination of age, income, education, marital status, children < 18 in the home, BMI (for diabetes only) and time in the US when exploring associations with both obesity and diabetes. Several limitations of this study are important to note. The NYC CHS 2009–2013 is cross-sectional and offers no opportunity to explore causal relationships. The survey relied on self-reported data. Self-reported diabetes is likely to underestimate the prevalence and disease burden in a population. Self-reported body weight is typically underreported only in overweight/obese participants, though generally by not more than 10% [36]. The NYC CHS uniformly defines those born in the continental US and US territories as US-born. Respondents born in Puerto Rico and the US Virgin Islands may resemble FBBs more so than USBBs [37], however, information about territory of origin was unavailable. Interview questions were only available in English, Spanish, Russian and Chinese which may have affected enrollment of speakers of other languages. In addition, NYC CHS data for time in the US was only available as < 5, 5 to < 10 years and ≥ 10 years which prevented exploration of time in the US as a continuous variable or variation beyond 10 years. Findings are specific to NYC and not generalizable to other urban settings in the US or Black subethnic populations in the US.

In conclusion, despite prior findings that FBBs are healthier than USBBs [5], this study demonstrates that the healthy immigrant effect may no longer apply to FBBs in NYC. Compared to USBBs, FBBs are at significantly increased risk for diabetes overall and at lower BMI. The

mechanisms for this difference warrants further research. Importantly, this study points to the pitfall of combining all Black populations into one category. Future research should examine specific ethnic and cultural backgrounds and the biological and social risk profiles that these differences entail. Failure to do so may bias population estimates and obscure the unique risk profiles of sub-ethnic groups in the African diaspora.

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Dataset Availability. The datasets analyzed during the current study are publicly available from the NYC DOH, https://www1.nyc.gov/site/doh/data/data-sets/community-health-survey-public-use-data.page

Compliance with Ethical Standards

Conflict of interest. The authors declare that they have no conflicts of interest.

Ethical Approval. Study procedures were in accordance with the ethical standards of The City University of New York Central Human Research Protection Program and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent. For this type of study formal consent is not required.

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