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Obesity

How Incarceration Influences Native-Born Black Men's Risk of Obesity

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Objective: To build upon research that investigates the health significance of familial and former incarceration with special emphasis on obesity risk among native-born Black (ie, African American) men.

Methods: We analyzed data from the 2001-2003 National Survey of American Life (NSAL), focusing on native-born Black men (n=1140), the demographic group that bears the brunt of mass incarceration. The outcome of interest was obesity as measured by body mass index (BMI)>30. Principal predictors were familial and former incarceration, and their statistical interaction.

Results: In survey-adjusted binomial logistic regression models, familial incarceration appeared an unimportant predictor; whereas, former incarceration associated with a lower risk of obesity. However, former incarceration modifies the association between familial incarceration and obesity, such that native-born Black men experiencing both familial and former incarceration were significantly more likely to be obese.

Conclusions: Public health researchers should treat former incarceration with greater care in studies including native-born Black men because time spent incarcerated has lingering physical health significance. *Ethn Dis.* 2018;28(2):69-74; doi:10.18865/ed.28.2.69.

Keywords: African American Men; Family; Incarceration; National Survey of American Life (NSAL); Obesity

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Introduction

It does not surprise health scholars that racial disparities persist in outcomes such as obesity.[1,2] Specifically, the Black population experiences a higher obesity rate than the White population. Racial disparities in obesity are a significant concern because they contribute to cumulative health and social disadvantage. Further, these racial disparities contribute differentially to disadvantage across subpopulations. For instance, although Black men are less likely than Black women to be obese,[2] recent trend data demonstrate that the gap between rates of obesity for Black men and women may be decreasing.[3]

Numerous factors predict obesity risk among Black men. For example, studies show that where Black men live can increase their obesity risk.[4] In addition, the food environment of a neighborhood, cultural variation in food preference, and exposure to poverty predict obesity.[5,6] James[7] argues barriers to healthy eating such as networks that promote unhealthy lifestyles predict obesity-related morbidity for Black men. Behavioral factors including physical activity, cigarette smoking, and binge drinking correlate with obesity risk among Black men.[2] In addition, family structure associates with obesity risk for Black men. For example, being married with children correlates with an elevated risk of obesity.[4,8]

Understudied in the existing literature is how family disruptions influence Black men's obesity risk.[9,10] One family disruption of immediate and critical consequence is incarceration. More precisely, we know too little about the role that familial incarceration (ie, the experience of having an immediate family member absent because they are in jail or prison) and former incarceration (ie, the experience of having been in jail or prison) play in shaping obesity risk among Black men.

Few scholars debate that Black men bear a disproportionate share of incarceration's direct impact. Estimates show that Black men have a 20% cumulative risk of incarceration, whereas the risk for White men is 3%.[11,12] Roughly 18% of Black men with high school degrees will experience incarceration before their early 30s.[11] This unequal incarceration burden exposes Black men to infectious diseases and increases their vulnerability to stress-related illnesses.[12,13] Beyond the direct impact, there are also indirect effects where those connected to incarcerated Black men experience health and adjustment problems. For example, scholars[12,14-21] are systematically investigating costs

of incarceration for women, children, families, and communities from which incarcerated Black men are separated (termed collateral consequences). Yet, scarce studies explore in tandem the direct and indirect consequences of incarceration for Black men.[12]

In our present study, we address whether familial incarceration predicts obesity risk among native-born Black men, including those who have never been incarcerated and those who have been formerly incarcerated. We extend work by Lee and colleagues[22] who examined familial incarceration as a correlate of physical health. Their work established familial incarceration as a chronic stressor; however, they concluded that familial incarceration predicted obesity risk but only for women.

We address whether familial incarceration predicts obesity risk among native-born Black men, including those who have never been incarcerated and those who have been formerly incarcerated.

Methods

The 2001-2003 National Survey of American Life (NSAL) interviewed a nationally representative sample of native-born and Caribbean Black adults, and White adults (n=6082). We restricted our estimation sample to native-born Black (ie, African American) men (n=1140). Response rates and sample design details are reported elsewhere.[23-25] We coded this study's variables consonant with Lee et al[22] and analyzed merged, publicly available data and restricted access data secured from the Inter-university Consortium for Political and Social Research (ICPSR Study No. 20240). The restricted access data included measures of familial and former incarceration. The Institutional Review Board at Rice University approved our use of the restricted access data (IRB-FY2017-329) to investigate links among incarceration, family dynamics, and health status.

Body mass index (BMI) >30, calculated as weight in kilograms divided by the square of height in meters, defined obesity. For familial incarceration, respondents were asked, "Do you have any family members—husband/wife, children, mother, father, brother, or sister—who are away at any of the following? School or college, the military, a long-term care facility or nursing home, or jail or prison." For former incarceration, respondents were asked, "Have you ever spent time in a reform school, detention center, jail, or prison?" Those respondents stating "yes" to jail or prison were counted as experiencing familial or former incarceration, respectively.

We controlled for age, income-needs ratio (ie, household income divided by 2001 census poverty threshold according to family size), education, marital status, health insurance, family members missing for non-incarceration reasons (i.e., school or college, the military, or a long term care facility), self-rated health in childhood (up to age 16 years; 1=poor to 5=excellent), being primarily raised in a non-2-parent household (up to age 16 years), family ever received public assistance when growing up, and physical activity (summed responses to three questions ranging from 0=never to 3=often: "How often do you work in the garden or the yard?" "How often do you engage in active sports or exercise?" "How often do you take walks?"). These are the same control variables Lee et al[22] used in their study and represent a robust set of social determinants of health.

All analyses presented adjust for the NSAL's complex survey design using the survey package in R 3.4.2.[26] First, we describe the distribution of obesity, the control variables, and familial and former incarceration. We then report estimates from binomial logistic regression models relating familial and former incarceration to obesity, adjusting for the control variables.

Results

Table 1 shows that 30% of native-born Black men participating in the NSAL were obese. It also shows survey-adjusted univariate distributions for the control variables: age, income-to-needs ratio, education, marital status, health insurance, family members missing for non-incarceration reasons, self-rated health in childhood, being primarily raised in a non-2-parent household, family ever-received public assistance when growing up, and physical activity. To preserve space, we do not discuss the control variables.

Table 2 displays the survey-adjusted prevalence and intersection of familial and former incarceration. We found that 10% of native-born

Table 1. Descriptive statistics: risk of obesity and control variables among native-born Black men (n=1140) in the National Survey of American Life, United States, 2001–2003

Characteristic	Proportion (SE) or Mean ± SE
Obese, BMI>30, 1=yes; 0=no	.30 (.01)
Intercept	
Age	
≤29[a]	.25 (.02)
30-44	.36 (.01)
45-59	.24 (.01)
≥60	.15 (.01)
Income-needs ratio, range 0-17	3.10 ±.13
Education	
≤11[a]	.23 (.02)
12	.41 (.02)
13-15	.23 (.02)
≥16	.14 (.01)
Marital status	
Married/cohabiting[a], 1=yes; 0=no	.50 (.02)
Divorced, separated, or widowed, 1=yes; 0=no	.20 (.01)
Never married, 1=yes; 0=no	.30 (.02)
Has health insurance, 1=yes; 0=no	.82 (.01)
Family member away in school, military, or long-term care, 1=yes; 0=no	.23 (.02)
Self-rated health in childhood, range 1-5	4.23 ±.04
Non-2-parent household in childhood, 1=yes; 0=no	.30 (.02)
Welfare usage in childhood, 1=yes; 0=no	.21 (.02)
Physical activity, range 0-9	5.66 ±.08

Estimates adjusted for the NSAL's complex survey design. Available sample size=1222.
a. Excluded groups in the regression models in Table 3.

Black men had experienced familial incarceration and 23% had been formerly incarcerated. When intersected, 70% of native-born Black men had experienced neither, 27% experienced one or the other, and 2% experienced both types of incarceration.

Table 3 presents odds ratios and 95% CIs from survey-adjusted binomial logistic regression models relating familial and former incarceration to obesity, net of the control variables. Age, income-to-needs ratio, and education were included in the models but are not shown in the table (full model estimates are available upon request). Model 1 included familial and former incarceration as main effects, and replicates Lee et al's[22] model predicting obesity, but for native-born Black men only. In this model, familial incarceration appeared an unimportant predictor of obesity, whereas former incarceration predicted smaller odds of obesity.

Treating NSAL respondents not experiencing familial and former incarceration as the excluded group, Model 2 used dummy variables to represent the statistical interaction between familial and former incarceration. This approach to moderation creates dummy variables mapping the intersection of the two categorical variables and omits the categorical variables' main effects. In terms of their intersection, formerly incarcerated Black men without currently

Table 2. Descriptive statistics for familial and former incarceration among native-born Black men (n=1140) in the National Survey of American Life, United States, 2001–2003

Characteristic	Proportion (SE)
Familial incarceration, 1=yes; 0=no	.10 (.01)
Former incarceration, 1=yes; 0=no	.23 (.01)
Familial (no)—Former (no)[a]	.70 (.02)
Familial (yes)—Former (no)	.07 (.01)
Familial (no)—Former (yes)	.20 (.01)
Familial (yes)—Former (yes)	.02 (.01)

SE=standard error. Estimates adjusted for the NSAL's complex survey design. Available sample size= 1222.
a. Excluded groups in the regression models in Table 3.

Table 3. Binomial logistic regression model estimates: how familial and former incarceration influence risk of obesity among native-born Black men (n=1140) in the National Survey of American Life, United States, 2001–2003

	Model 1	Model 2	Model 3
Characteristic	OR (95% CI)	OR (95% CI)	OR (95% CI)
Intercept	.58 (.24, 1.44)	.62 (.25, 1.56)	.62 (.25, 1.56)
Marital status			
Married/cohabiting[a], 1=yes; 0=no	1.00	1.00	1.00
Divorced, separated, or widowed, 1=yes; 0=no	.63 (.42, .95)	.64 (.43, .96)	.64 (.43, .96)
Never married, 1=yes; 0=no	.73 (.49, 1.08)	.73 (.49, 1.09)	.73 (.49, 1.09)
Has health insurance, 1=yes; 0=no	1.21 (.75, 1.94)	1.20 (.75, 1.92)	1.20 (.75, 1.92)
Family member away in school, military, or long-term care, 1=yes; 0=no	.79 (.58, 1.07)	.79 (.58, 1.08)	.79 (.58, 1.08)
Self-rated health in childhood, range 1-5	1.00 (.88, 1.15)	1.00 (.88, 1.13)	1.00 (.88, 1.13)
Non-2-parent household in childhood, 1=yes; 0=no	.86 (.62, 1.17)	.85 (.62, 1.17)	.85 (.62, 1.17)
Welfare usage in childhood, 1=yes; 0=no	.77 (.52, 1.16)	.77 (.52, 1.16)	.77 (.52, 1.16)
Physical activity, range 0-9	.95 (.88, 1.03)	.95 (.88, 1.02)	.95 (.88, 1.02)
Familial Incarceration, 1=yes; 0=no	.77 (.44, 1.33)		.56 (.27, 1.15)
Former Incarceration, 1=yes; 0=no	.66 (.45, .97)		.58 (.39, .87)
Familial (no)—Former (no)[a]		1.00	
Familial (yes)—Former (no)		.56 (.27, 1.15)	
Familial (no)—Former (yes)		.58 (.39, .87)	
Familial (yes)—Former (yes)		1.06 (.55, 2.02)	3.24 (1.26, 8.29)

SE=standard error; CI=confidence interval; OR=odds ratio. Estimates adjusted for the NSAL's complex survey design. Models control for age, education, and income-to-needs ratio. Available sample size= 1222.
a. Excluded groups in the regression models.

incarcerated family members were less likely to be obese, compared with their never incarcerated counterparts whose family members were not incarcerated. Model 3 tests whether familial and former incarceration jointly impact obesity using a multiplicative statistical interaction term, where in addition to the categorical variables' main effects, their product becomes a predictor variable. Odds of obesity increased by a factor of 3.24 when formerly incarcerated native-born Black men experienced familial incarceration. Consistent with Model 1, former incarceration negatively associated with obesity, replicating findings reported by Bailey et al who used the same data as this study.[27] This salutogenic effect may be a function of cigarette smoking,[23] which may start in jail or prison and tends to suppress weight gain, but evidence that the culprit is cigarette smoking is equivocal.[27]

Discussion

We found that former incarceration interacts with familial incarceration to predict obesity risk among native-born Black men. Our findings demonstrate that incarceration cannot be discounted when examining obesity risk among native-born Black men who are distinctly vulnerable, as one would hypothesize, given their overrepresentation in jails and prisons.

The present study's findings contribute to a growing body of work focused on the health consequences of incarceration. Specifically, we extend findings from Lee et al[22] by demonstrating that Black women and children are not the only persons to experience the collateral consequences of incarceration. Formerly incarcerated native-born Black men experience increased obesity risk when their relatives are incarcerated. This result seems obvious but has not been demonstrated previously. We speculate that the decreasing gap between Black men's and women's[3] obesity rates may be linked to growth of the prison industrial complex, and Black men's overrepresentation among those serving time and those with incarcerated family members.

We acknowledge that the number of native-born Black men experiencing both familial and former incarceration when the NSAL data were collected over 15 years ago is relatively small (2%). However, that number has probably grown exponentially. If we consider only "jail churn," at least 11 million people cycled through local jails in 2016[28] and they were disproportionately Black men. In addition, more than 640,000 ex-offenders are released from state and federal

prisons yearly. Recidivism rates are high, with more than two-thirds of the formerly incarcerated rearrested within three years of release (and again, those rearrests were disproportionately Black men).[29] Further, native-born Black men participating in social surveys are more stable than their non-responding counterparts entering and exiting the criminal justice system—hence our results are conservative. Further still, we suspect that continued growth of the prison industrial complex means native-born Black men will soon be the most likely group to experience incarceration's direct impact and its collateral consequences. Because Black men are overrepresented among the incarcerated, we hope that researchers will gather data from Black men while they are incarcerated and also investigate what factors predict resilience or empathetic inurement[24] among recently freed Black men.

The present study is novel and timely. Moreover, its limitations should guide future research. First, no studies capture sufficient details regarding incarceration history. Details such as duration of captivity, time spent in solitary confinement, frequency of visitations during incarceration, exposure to violence or sexual assault during captivity, etc. are neglected. Second, results shown here do not explain why former incarceration moderates familial incarceration's link with obesity. It could be that formerly incarcerated, native-born Black men consume greater quantities of unhealthy foods or alcohol, which despite its thermogenic effects may cause weight gain, when coping with familial incarceration. Alternatively, the mechanism may be stigma, affecting a formerly incarcerated father/brother/uncle, for example, whose son/brother/nephew becomes imprisoned thereby instigating an inter-generational cycle of despair. Unfortunately, the NSAL data do not include plausible mechanisms that might explain former incarceration's moderating effect. Third, health researchers who conceptualize imprisonment as mere absence are likely to develop unsound conclusions. Incarcerated native-born Black men are not only absent from their families and communities, but are captives of total institutions that strip them of their dignity, individuality, and humanity.[11,24,30,31] Consequently, formerly incarcerated, native-born Black men deserve careful attention in community epidemiologic research.[12,13,23,24,30] Fourth, although we focused on a physical health outcome, the mental health significance of incarceration and the psychological harm it causes require attention.[24,30] For instance, concurrence of familial and former incarceration could simultaneously impair physical and mental health to promote obesity among Black men. Finally, although we examine Black men, Black boys are also overrepresented among the incarcerated.

Conclusion

There appears little reason to doubt that mass incarceration scars lives because it represents cascading traumas, life events, chronic strains, non-events, and daily hassles. Being incarcerated or having a family member in jail or prison does not represent a singular event, but rather represents myriad stressful events, the diminution of social support, physical separation from loved ones, and exposure to deleterious conditions including violence and poverty. To wit, incarceration generates stress, especially for Black men who appreciate how the prison industrial complex supports the continuance of racism. As such, experiencing a family disruption firsthand because a relative is in jail or prison creates compounding difficulties from which Black people, families, and communities may never recover. Findings reported here and elsewhere[12,22-25,27,30,32] confirm that the incarceration of Black men should be considered a public health crisis.

We found that former incarceration interacts with familial incarceration to predict obesity risk among native-born Black men.

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Conflicts of Interest

No conflicts of interest to report.

Author Contributions

Research concept and design: Brown; Acquisition of data: Brown; Data analysis and interpretation: Brown, Culver, Bento; Manuscript draft: Brown, Culver, Bento; Sta-

tistical expertise: Brown, Culver; Administrative: Brown, Bento; Supervision: Brown

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