Inequality, Crime, and Health Among African American Males

The Relationship Between Health, Cigarette Smoking and Criminal Justice Contact among African Americans

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ABSTRACT

Introduction. This study examined the association between self-rated physical and oral health, cigarette smoking, and history of criminal justice contact (i.e., never arrested; arrested, but never incarcerated; or incarcerated in reform school, detention, jail, or prison) among African American men and women. Methods. We conducted descriptive statistical, linear regression, and multinomial regression analyses of the African American subsample (n = 3,570) from the National Survey of American Life (2001–2003). Results. *Overall, African American women reported lower arrest rates and histories of incarceration than African American men. Additionally, we found that criminal justice contact was associated with lower self-rated physical health and oral health and higher levels of smoking for both men and women. African American women who had been arrested and detained in facilities other than jail had more chronic health problems than their male counterparts. Furthermore, having been arrested or spent time in a reform school, detention center, jail, or prison significantly increased the odds of African American men being a current smoker. Lastly, among African American women, those who had any level of criminal justice contact were likely to be current smokers and former smokers compared to those without a history of criminal justice contact. Conclusion. Addressing the health of African Americans with criminal justice contact is a critical step in reducing health*

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disparities and improving the overall health and well-being of African American men and women. Furthermore, attention to differences by gender and specific types of criminal justice contact are important for a more precise understanding of these relationships.

Keywords: African Americans; criminal justice; physical health; oral health; cigarette smoking

INTRODUCTION

African American men and women suffer from more chronic health conditions and have shorter life expectancies than Whites and persons of other races (Geruso, 2012). African American males, especially, are affected (Murray et al., 2006). A large proportion of this population have chronic diseases, such as heart disease, asthma, HIV/AIDS, diabetes, and cancer-related disparities (Freudenberg, 2006; Hammett, 2006; Spaulding et al., 2009; Travis, Western, & Redburn, 2014; U.S. Department of Health & Human Services, n.d). Additionally, blood-borne illnesses and communicable diseases like hepatitis B, hepatitis C, and tuberculosis also affect this population.

Imprisonment exacerbates these debilitating health conditions and contributes to poor health, making it a public health crisis for this population. Nearly seven million Americans are incarcerated in US jail and prison facilities or 1 of every 34 adults (Glaze & Parks, 2012). Incarceration overwhelmingly affects African Americans, and in the last 25 years there has been a rapid increase in the rates at which African American men and women are arrested and imprisoned. For African American men, one in six have been arrested since 2001 (Maur & King, 2007) and one in three African American males can expect to serve time in prison or jail during his lifetime (Lyons & Pettit, 2011). African American women are also disproportionately affected by the criminal justice system (Braithwaite, Treadwell, & Arriola, 2008; Greenfield, 1994). For African American women in their 30s, 1 in 100 is currently in prison (Frost, Green, & Pranis, 2006). Although African Americans comprise 13% of the general US population, they make up 28% of all arrests, are likely to serve longer and harsher sentences, and comprise 40% of all inmates held in prisons (Pew Center on the States, 2008).

Overall, 50% of federal prison inmates and 21% of state prison inmates are incarcerated on drug-related charges (Dumont, Allen, Brockmann, Alexander, & Rich, 2013). The "war on drugs" and "tough on crime" policies of the 1970s and 1980s had a dramatic impact on African Americans, resulting in a drastic increase in arrests and convictions. These policies, which were strictly enforced in poor and inner city areas, resulted in harsher sentencing policies, particularly for crack cocaine offenses (Angeli, 1997). Further, while these policies were implemented, minimal efforts were directed toward drug use prevention and treatment within those communities (Travis et al., 2014). Thus, African Americans who used drugs were more likely than any other racial or ethnic group to be arrested

(Angeli, 1997). Further, women are more likely to be incarcerated for drug and property related offenses, while men are more likely to be incarcerated for violent crimes (Guerino, Harrison, & Sabol, 2011).

Incarceration and Physical Health

A growing body of literature suggests that the health of individuals, and particularly members of already vulnerable minority populations, worsens while incarcerated, making these individuals sicker than the general adult population. (Baussano et al., 2010; Binswanger, Krueger, & Steiner, 2009; Dumont et al., 2013; Golembeski & Fullilove, 2005). There are several reasons for this. First, limited privacy in prison may make incarcerated individuals reluctant to comply with HIV treatment and treatment for other sexually communicable diseases, leaving these individuals untreated for these health conditions. Sexual coercion and bartering within these settings may also facilitate disease transmission (Wilper et al., 2009). Second, untreated bleeding injuries suffered by inmates in poorly managed prisons pose an obvious risk of transmission of blood-borne diseases (Wilper et al., 2009). Third, because some conditions, such as diabetes, are "silent" and remain asymptomatic for extended periods of time, early detection and effective treatment is difficult for the incarcerated, where preventative medicine is virtually non-existent (Mallik-Kane & Visher, 2008).

Although incarcerated individuals suffer from at least one type of chronic health condition, many have multiple health conditions (Dumont et al., 2013), which complicates chronic disease treatment for this population. Notably, female inmates report more co-occurring conditions than men; in one study, 62% of women reported multiple chronic health conditions (Mallik-Kane & Visher, 2008). In some state jails and prisons, permitted co-pays charged to inmates are financial deterrents for those who need health and dental care services but cannot afford them (Eisen, 2015). Physical health disorders and symptoms frequently reported by inmates include headache, respiratory infections, and diarrhea (Pinheiro, Araújo, Vasconcelos, & Nascimento, 2015). Many experienced these physical health issues while living in poor living conditions prior to incarceration. However, the degraded physical conditions of prison worsens these conditions (Pinheiro et al., 2015). Although some individuals receive treatment for these conditions while incarcerated, many do not (Hammett, 2006; Spaulding et al., 2009), making this an urgent problem that needs to be addressed.

Incarceration and Oral Health

Disparities in oral health are also evident among inmates (Mixson, Eplee, Feil, Jones, & Rico, 1990; Treadwell & Formicola, 2005), a situation that is especially troubling given that oral and physical health are inextricably linked (Mixson et al., 1990; Treadwell & Formicola, 2005). Inmates, as compared to adults who are not incarcerated, are more likely to have unmet dental care needs, including periodontal disease, cavities (Treadwell & Formicola), untreated tooth decay,

and missing teeth over the life course (Salive, Carolla, & Brewer, 1989). The waiting period for dental care in prisons can be lengthy and, in some cases, treatment is inadequate (*Peralta v. Dillard*, 744 F.3d 1076 (9th Cir. 2014)). Furthermore, African American as compared to White inmates suffer disproportionately from oral health problems (Mixson et al., 1990). For example, one study found that African American inmates reported significantly more decayed teeth in the 20–34 age group (Mixson, 1990).

Smoking and Physical and Oral Health Among African Americans

Tobacco smoke is a well-established contributor to poor physical and oral health. For example, although African Americans generally smoke fewer cigarettes and start smoking later in life than Whites, they are more likely to die from illnesses related to smoking (American Lung Association, 2010). Furthermore, tobacco use is a significant contributor to heart disease, cancer, and stroke, the three leading causes of death in this population (Centers for Disease Control & Prevention, 2013). The fourth leading cause of death among African Americans – diabetes – is affected by tobacco use, and the risk of developing diabetes is higher by 30–40% for cigarette smokers than nonsmokers (Centers for Disease Control & Prevention, 2013). Exposure to second-hand smoke has important health consequences as well. African American children and young adults are more likely to be exposed to second-hand smoke than any other racial or ethnic group as measured by their higher cotinine levels, an indicator of recent exposure to tobacco (Centers for Disease Control & Prevention, 2013).

Poor oral health among incarcerated populations has also been associated with smoking (Mixson et al., 1990; Treadwell & Formicola, 2005). Tobacco use (e.g., cigarette smoking, chewing tobacco) causes a variety of oral health and cosmetic issues for users, including gum disease, oral cancer, stained teeth and tongue, dulled sense of taste and smell, slower healing after a tooth extraction or other surgery, and difficulties in correcting cosmetic dental problems (American Dental Association, 2014). Exacerbating these physical problems is nicotine's addictive nature, making it harder for inmates to stop using tobacco products (American Dental Association, 2014). Despite this, smoking among inmates is an essential part of the culture and social norms within prisons and other criminal justice settings (Butler, Richmond, Belcher, Wilhelm, & Wodak, 2007; Richmond et al., 2009). Inmates report that they use cigarettes as a form of currency and that they smoke to alleviate feelings of boredom and to facilitate social interactions with prison guards, other inmates, and staff (Patrick & Marsh, 2001; Richmond et al., 2009). Inmates also report smoking to manage the stressful situations unique to the prison system, such as poor prison conditions, prison transfers, parole board and court appearances, prison visits, and lack of social support (Richmond et al., 2009).

Tobacco policy in US prisons has dramatically changed since the 1980s, when cigarettes were freely distributed to inmates. In 2004, the Federal Bureau of Prisons enacted an indoor smoking ban for all federal prisons in response to litigation from nonsmoking inmates concerned about second-hand smoke

exposure and the rising costs of providing health care to incarcerated populations (Cork, 2012; Hammond & Emmons, 2005). State correctional facilities followed suit and implemented their own regulations to ban or limit smoking within their prison systems (American Nonsmokers Rights Foundation, 2015). Kauffman, Ferketich, and Wewers (2008), found that almost 90% of prisons prohibited smoking in medical, chapel, and vocational and educational areas, and about 60% banned smoking altogether within prison gates.

Although the literature on smoking and incarceration is somewhat sparse, a few studies examine tobacco use in prison (Cropsey & Kristeller, 2003, 2005; Kauffman et al., 2008; Richmond et al., 2009). One of the unintended consequences of banning smoking in prison is that it created a black market for tobacco products in many correctional institutions (Lankenau, 2001; Thibodeau, Seal, Jorenby, Corcoran, & Sosman, 2012). Black markets for tobacco products not only make smoking possible despite any ban, but they also increase the cost of tobacco. In response, many inmates turned to unfiltered, hand-rolled cigarettes as a cheaper alternative, which puts them at greater risk of lung cancer (Harris, Thun, Mondul, & Calle, 2004; Kauffman, Ferketich, Murray, Bellair, & Wewers, 2011). Kauffman and colleagues (2011) found that when cigarettes were available, 97.3% of male prison-smokers opted to use hand-rolled cigarettes instead of the filtered ones. Additionally, 64.5% of their sample still smoked daily despite the ban. The use of smokeless tobacco was another popular alternative to smoking filtered cigarettes, with 17% of their sample using it daily (Kauffman et al., 2011). Cropsey and colleagues' (2010) study of tobacco use among incarcerated women found that most women (89.7%) only used one form of tobacco, predominantly cigarettes (96.7%). Further, 93.7% of the smokers reporting smoking every day, and most (51.5%) smoked an average of 10 or fewer cigarettes per day (Cropsey, Eldridge, & Ladner, 2004). This evidence clearly indicates that smoke-free prison policies or forced smoking abstinence is insufficient for promoting sustained smoking cessation while incarcerated. Further, Bailey, Okechukwu, Kawachi, and Williams (2015), found that a history of former incarceration was "consistently and independently associated with a higher risk of current tobacco smoking" (p. e4) among African American men and women.

Purpose of the Study

The literature on incarcerated African Americans underscores the ways that physical and oral health is compromised within criminal justice settings. This study focuses on physical and oral health in relation to criminal justice contact, with smoking as an important contributor to poor physical and oral health. An important next goal for research is to examine the lasting impacts on health of various previous criminal justice histories, including prior incarceration. We use data from the National Survey of American Life to investigate how different types of criminal justice contact (arrests as well as imprisonment) are associated with poor health as measured by self-rated physical health, self-rated oral health, the number of chronic health conditions, and smoking behaviors.

METHODS

Sample

The National Survey of American Life: Coping with Stress in the Twenty-first Century (NSAL) was collected by the Program for Research on African Americans at the University of Michigan's Institute for Social Research. The field work for the study was completed by the Institute for Social Research's Survey Research Center, in cooperation with the Program for Research on African Americans. The NSAL sample has a national multistage probability design which consists of 64 primary sampling units. Fifty-six of these primary areas overlap substantially with existing Survey Research Center's National Sample primary areas. The remaining eight primary areas were chosen from the southern United States, in order for the sample to represent African Americans in the proportions in which they are distributed nationally.

The data collection was conducted from February 2001 to June 2003. A total of 6,082 face-to-face interviews were conducted with persons aged 18 or older, including 3,570 African Americans, which is the subsample used for this analysis. The overall response rate was 72.3% and 70.7% for African American. Final response rates for the NSAL two-phase sample designs were computed using the American Association of Public Opinion Research (AAPOR) guidelines (for Response Rate 3 samples) (AAPOR 2006) (see Jackson et al. (2004) for a more detailed discussion of the NSAL sample). The NSAL data collection was approved by the University of Michigan Institutional Review Board.

Measures

Dependent Variables

Four dependent variables are in this analysis, including: a measure of self-rated physical health; a measure of self-rated oral health; reported number of chronic health conditions; and a measure of cigarette smoking behavior (Table 1). Self-rated physical health was measured by respondents' rating of their overall physical health at the time the survey was administered, with a rating of 1 = poor, to 5 = excellent. Self-rated oral health was measured by respondents' rating of their overall oral health at the time the survey was administered, with 1 = poor, to 5 = excellent. Cigarette smoking behavior had three categories: current smoker, former smoker, and never smoked more than 100 cigarettes in a lifetime. Chronic health problems were measured by respondents' reports of doctor-diagnosed physical chronic health conditions (e.g., hypertension, stroke, blood circulation problems, heart problems, heart attack, asthma, chronic lung disease, tuberculosis, arthritis, rheumatism, ulcers, very bad headaches, migraines, and serious back problems).

Independent Variables

The main independent variable is criminal justice contact which measures whether a person has had any type of incarceration or if they have ever been arrested, but not incarcerated. This variable has six categories: never arrested;

Table 1. Demographic Characteristics of the Sample and Distribution of Study Variables.

	%	*N*	Mean	SD	Min.	Max.
Men						
Age		1271	41.98	15.80	18	93
Years of education		1271	12.42	2.53	0	17
Family income		1271	42560	40153	0	400000
Marital status						
Married/cohabit	49.42	552				
Not married	50.58	716				
Region						
Northeast	15.51	150				
North central	17.43	202				
South	56.84	822				
West	10.22	97				
Employment status						
Employed	71.42	887				
Unemployed	8.76	104				
Not in labor force	19.82	276				
Arrest/incarceration history						
Never arrested	46.19	573				
Arrested at least once in lifetime	27.27	341				
Reform school	1.83	20				
Detention	3.21	40				
Jail	18.44	232				
Prison	3.05	44				
Self-rated health		1217	3.52	1.05	1	5
Self-rated dental health		1216	3.16	1.09	1	5
# of chronic health problems		1217	1.13	1.32	0	8
Smoking behavior						
Former smoker	17.87	225				
Current smoker	32.09	397				
Never smoked	50.04	587				
Women						
Age		2299	42.60	13.72	18	93
Years of education		2299	12.44	2.05	0	17
Family income		2299	32328	27845	0	520000
Marital status						
Married/cohabit	35.55	670				
Not married	64.45	1624				

Table 1. (*Continued*)

	%	*N*	Mean	SD	Min.	Max.
Region						
Northeast	15.83	261				
North central	19.90	393				
South	55.78	1508				
West	8.49	137				
Employment status						
Employed	63.23	1447				
Unemployed	11.10	262				
Not in labor force	25.67	585				
Arrest/incarceration history						
Never arrested	78.81	1791				
Arrested at least once in lifetime	12.21	281				
Jail	6.54	149				
Other	2.44	46				
Self-rated health		2220	3.34	0.88	1	5
Self-rated dental health		2219	3.08	0.93	1	5
# of chronic health problems		2220	1.55	1.29	0	10
Smoking behavior						
Former smoker	12.52	275				
Current smoker	24.29	534				
Never smoked	63.19	1393				

Notes: Percents and *N* are presented for categorical variables and Means and Standard Deviations are presented for continuous variables. Percentages are weighted and frequencies are un-weighted.

arrested, but never incarcerated; incarcerated in reform school; incarcerated in detention; incarcerated in jail; and incarcerated in prison.

Sociodemographic factors used as control variables are: age, household income, years of education, marital status, region, and employment status. Age and education are coded in years; missing data for education was imputed for 74 cases. Household income is coded in dollars; missing data for household income was imputed for 773 cases (12.7% of the total NSAL sample). Marital status is coded as married/cohabiting vs. not married. Region is coded as four categories: Northeast, North Central, West, and South. Employment status is coded as three categories: employed, unemployed, not in the labor force.

Analysis Strategy

The distribution of sociodemographic characteristics and linear regression analyses were conducted using SAS 9.13. Ordinary Least Squares regression analysis was used with the continuous dependent variables and multinomial logistic

regression was used to analyze smoking behavior. Beta estimates and standard errors are presented for both linear regression and multinomial regression analyses. Multinomial logistic regression is appropriate for the three-level polytomous response outcome variable smoking behavior and can accommodate both continuous and categorical independent variables. The format and interpretation of this analysis is similar to dummy variable regression and consists of contrasts between a comparison and an excluded category. However, in multinomial logistic regression, comparisons between selected categories and the excluded category involve the dependent variable (as opposed to the independent variable in standard dummy variable regression). Specifically, the results focus on contrasts involving: (1) current smoker vs never smoked and (2) former smoker vs never smoked. For this analysis, the reference category is "never smoked."

The analyses were conducted using SAS 9.13, which uses the Taylor expansion approximation technique for calculating the complex design-based estimates of variance. To obtain results that are generalizable to the African American population, all analyses utilize analytic weights. All statistical analyses accounted for the complex multistage clustered design of the NSAL sample, unequal probabilities of selection, non-response, and post-stratification to calculate weighted, national representative population estimates, and standard errors. All percentages reported are weighted.

RESULTS

Descriptive characteristics of the sample are presented in Table 1. Both men and women in the sample are an average age of 42 years and have 12.4 years of formal education. Men are more likely than women to be married/cohabitate, have higher family incomes, and to be employed. The regional distribution of men and women is roughly the same with more than half of each group residing in the South. With respect to physical health and smoking behaviors, women have more chronic health problems, are less likely to be current smokers, and are more likely to have never smoked. Women are much less likely to have contact with the criminal justice system; 78% of women report that they have never been arrested, while 46.19% of men have never been arrested. Men are also much more likely than women to have spent time in jail (18.44% compared to 6.54%).

The multivariate analysis of criminal justice contact for the selected measures of health among African American men (Table 2) indicates several significant relationships between criminal justice contact and self-rated physical health, self-rated oral health, and smoking behavior. With respect to self-rated health, men who were previously in detention indicated lower levels of self-rated health compared to men who had never been arrested. Men who had never been arrested indicated significantly better oral health than those who had been arrested; been in jail; or been to prison. Also noted in Table 2, men who have been arrested, been to reform schools, or been in jail were significantly more likely report being a former smoker. Further, men who had been arrested, in reform school,

Table 2. Regression Analysis of Criminal Justice Contact on Selected Indicators of Health Among African American men.

	Arrested b(se)	Reform b(se)	Detention b(se)	Jail b(se)	Prison b(se)	F	R^2	N
Self-rated health	−0.07(0.07)	−0.02(0.34)	−0.38(0.13)**	−0.05(0.09)	−0.13(0.17)	20.95***	0.13	1201
Self-rated dental health	−0.26(0.08)**	−0.15(0.31)	−0.29(0.08)	−0.47(0.14)***	−0.47(0.17)*	13.80***	0.11	1200
# of chronic health problems	0.15(0.08)	0.95(0.49)	0.24(0.20)	0.11(0.129)	0.34(0.29)	25.37***	0.23	1201
Smoking behavior								
Former smoker	0.65(0.24)*	2.30(0.86)*	0.94(0.53)	1.08(0.25)***	1.21(0.68)	13.77***	–	1200
Current smoker	0.90(0.21)***	2.32(0.72)**	1.62(0.37)***	1.38(0.22)***	1.84(0.47)***			

Notes: b = regression coefficient; se = standard error.
Criminal justice contact is a dummy variable. Never been arrested is the excluded category.
Analysis of smoking behavior is conducted using multinomial logistic regression. Non-smoker is the excluded category.
All analyses control for age, family income, years of education, marital status, employment status and region.
*$p < .05$; **$p < .01$; ***$p < .001$.

Table 3. Regression Analysis of Criminal Justice Contact on Selected Indicators of Health Among African American Women.

	Arrested b(se)	Jail b(se)	Other b(se)	*F*	R^2	*N*
Self-rated health	−0.17(0.06)**	−0.18(0.10)	−0.39(0.27)	20.19***	0.11	2193
Self-rated dental health	−0.30(0.08)***	−0.35(0.09)***	−0.08(0.14)	22.17***	0.09	2192
# of chronic health problems	0.48(0.10)***	0.24(0.15)	0.60(0.17)**	48.74***	0.20	2193
Smoking behavior						
Former smoker	1.12(0.18)***	1.43(0.35)***	1.47(0.47)**	34.30***	–	2189
Current smoker	1.18(0.16)***	1.31(0.22)***	1.69(0.43)***			

Notes: b = regression coefficient; se = standard error.
Criminal justice contact is a dummy variable. Never been arrested is the excluded category.
Analysis of smoking behavior is conducted using multinomial logistic regression. Non-smoker is the excluded category.
All analyses control for age, family income, years of education, marital status, employment status and region.
*$p < .05$; **$p < .01$; ***$p < .001$

detention, jail, or prison had significantly higher odds of being a current smoker compared to men with no criminal justice contact.

Table 3 presents the findings of the regression analysis for criminal justice contact and the health of African American women. African American women are much less likely to be arrested and incarcerated than men. Consequently, there were insufficient numbers of women per incarceration history category (i.e., those who had experienced criminal justice contact and reform school, detention, or prison) to perform regression analysis. Therefore, the categories of reform school, detention, and prison were combined into a single category; there were sufficient numbers of women who reported having been in jail. The resulting criminal justice contact variable has three levels: arrested, jail, and other carceral settings (reform school, detention, and prison). Criminal justice contact was significantly associated with each of the four dependent variables. Women who had been arrested had lower self-rated health than those who have never been arrested. Further, women who had been arrested (but not incarcerated) and those who had been in jail had lower levels of self-rated oral health than women who had never been arrested. Additionally, women who had been arrested and those who had been detained in facilities other than jail (i.e., reform school, detention, and prison) had more chronic health problems than women who had never been arrested. With respect to smoking behaviors, each category of criminal justice contact was significantly associated with smoking behaviors. African American women at all levels of criminal justice contact were more likely to be current smokers and more likely to be former smokers as compared to women who had never been arrested.

DISCUSSION

This study examined the relationship between criminal justice contact (i.e., arrest, reform school, or jail/prison), physical and oral health, and smoking among African American men and women. We found that criminal justice contact was associated with lower self-rated physical health and oral health and higher levels of smoking for both men and women. African American men and women with criminal justice contact reported being current smokers and having lower self-rated health than those who have never been arrested. African American men who had been arrested, in reform school, and jail were also more likely to be former smokers than those who had never been arrested. Furthermore, all forms of criminal justice contact (in comparison to never having been arrested) significantly increased the odds of African American men being a current smoker.

African American women reported lower arrest rates and histories of incarceration than African American men. However, like men, both former and current smoking were significantly associated with each category of criminal justice contact. Interestingly, African American women who had been arrested reported lower self-rated health than women who had never been arrested; no differences in self-rated health were found for having been in jail or in other facilities. Further, women who had been arrested and held in other facilities (other than jail) had more chronic health problems than their never arrested counterparts. Also, women who had been arrested or been in jail had poor self-rated oral health as compared to women not involved in the criminal justice system.

Our results are consistent with previous literature on the physical and oral health status and smoking behaviors of African American men and women involved in the criminal justice system (Bailey et al., 2015). This study and other research confirms that incarceration is associated with poorer health conditions experienced by African Americans in terms of multiple chronic health problems, including poor oral health (Freudenberg, 2006; Hammett, 2006; Spaulding et al., 2009; Valera & Kratz, 2014). It is particularly important to note that infections of the mouth interact with and complicate the treatment of general health conditions such as cardiovascular disease and diabetes – two chronic illnesses that affect disproportionate numbers in the US prison population (Treadwell & Formicola, 2005). Thus, improving oral health is an important goal and strategy for improving the overall health of African Americans who are incarcerated.

The Eighth Amendment's prohibition of cruel and unusual punishment affirms inmates' constitutional right to health care (Estelle v. Gamble, 1976). However, access to appropriate and quality health care for both physical health and oral health services is limited and varies within and across correctional facilities. For example, dental care is considered an essential health service by the National Commission on Correctional Health Care and the Centers for Disease Control and Prevention outline specific guidelines for infection control in dental care settings (Treadwell & Formicola, 2005). Despite this, the oral health of inmates remains poor, obstacles to providing adequate dental care in correctional settings are numerous, and systematic information on the overall dental

health of inmates is scarce (Treadwell & Formicola, 2005). Further, formal judicial avenues for addressing inadequate dental care in the correctional system must meet the Eighth Amendment standard for cruel and unusual punishment, which can be difficult, as evidenced by prior unsuccessful attempts to do so (Peralta v. Dillard, 2014).

Finally, it is important to consider the physical and oral health status of persons who have criminal justice system contact within a broader social context and in relation to specific carceral settings. For example, former prison inmates confront numerous structural barriers and challenges to community reentry that are different than those faced by former jail inmates and those experiencing other forms of custody. Depending on the state, former prison inmates can be barred from public housing, education, obtaining a driver's license, social and health benefits, and employment (Hagan & Dinovitzer, 1999; Travis et al., 2014). These restrictions are significant barriers to the fundamental resources that are essential for establishing and maintaining a stable and a healthy life (Valera & Kratz, 2014). Further, these compromised circumstances are themselves stressful and may exacerbate the perceived need for coping responses that, while harmful to health (e.g., tobacco use), are used to manage emotions such as stress and anxiety. For example, Valera and colleagues (2014) found that formerly incarcerated men viewed cigarettes as part of a daily routine. Importantly, smoking relapse was related to attempts to manage stress and anxiety.

Limitations

Several limitations of this study should be noted. First, our sample, like similar national probability based samples, does not include homeless adults or institutionalized populations such as men and women in halfway houses or other group home living arrangements (e.g., substance abuse group homes). These populations have a higher likelihood of having contact with the criminal justice system. Second, causal inferences are an issue with cross-sectional data and longitudinal data are preferred. In the absence of prospective data, we are limited in the ability to understand the causal processes by which criminal justice contact influences health and smoking behavior. Third, although our sample is relatively large, there are still only a small number of respondents who experienced incarceration. This is especially true for African American women. Nonetheless, the significant advantages of the sample provided one of the first opportunities to examine a full range of criminal justice contact (arrests and incarceration) situations in relation to the physical and oral health status of African American men and women.

CONCLUSIONS

To our knowledge, this is the first study to investigate the relationship between varying degrees of criminal justice contact, self-rated physical and oral health, and smoking in a nationally representative sample of African American men and women. Further, most of the scholarly and research discourse around

incarceration has focused specifically on African American men. Our research is unique in that it focuses on examining the physical and oral health and smoking behaviors of African American women with varying experiences with the criminal justice system. Findings from the present study have important implications for understanding and addressing the health challenges facing this subgroup of African Americans. The following examples focus on cigarette smoking because it is a significant driver of several adverse physical and oral health outcomes (i.e., cardiovascular disease, gum disease, pulmonary disease, cancer) and is highly socially patterned and regulated within correctional settings.

Our findings suggest that taking into consideration race, gender, physical health, oral health, and smoking behaviors is critical for tailoring and maximizing the effectiveness of smoking cessation treatments for men and women across the criminal justice spectrum. Although smoking cessation programs within correctional settings are rare, incarcerated smokers indicate interest in participating in free cessation assistance programs, particularly if provided a pharmacotherapy option (Cropsey et al., 2010). Further, pre-release intentions to abstain from smoking are highly predictive of eventual reported post-release behavior (Thibodeau, Jorenby, Seal, Kim, & Sosman, 2010). Despite the ban on smoking, correctional facilities and community reentry programs do not provide smoking cessation treatment (Clarke et al., 2013; Kauffman et al., 2008). Consequently, the relapse rate for smoking is highest on the day after release from incarceration, which suggests that offering cessation services, both in correctional facilities and in the transition back to the community, is critical to reducing tobacco use in this population (Clarke et al., 2013). Understanding why inmates and former inmates continue to smoke may provide insight into how to increase the effectiveness of policies banning smoking in correctional settings and in maintaining smoking cessation upon release. Adding programs focusing on the dangers of smoking, alongside general health education programs tailored specifically to African Americans, is crucial to assisting this population in improving and maintaining their health both inside and outside of jail and prison.

Our findings regarding gender are particularly pertinent to tailoring messages for smoking cessation and other health programming. For example, two-thirds of women in state prisons are also mothers to minor children (Glaze & Maruschak, 2008) and 4% of women in state facilities and 3% in federal facilities are pregnant upon prison entry (Maruschak, 2008). For these subgroups of women, general smoking cessation efforts and pre-release intentions to abstain from smoking may be enhanced by using a two-fold approach that: (1) reinforces the harmful effects of smoking both during pregnancy and for children in the home (i.e., second-hand smoke) and (2) addresses alternative strategies for managing general and specific stressors.

More broadly, our findings suggest that it is important to examine the physical and oral health and smoking patterns of African American men and women across a wide spectrum of criminal justice experiences (e.g., arrest, reform, jail, detention, prison) and within specific subgroups (e.g., gender, age). Doing so would provide important background and contextual information for understanding their unique life circumstances and potential risks and resources for

promoting and maintaining health. Further, information of this sort is crucial for the development and effectiveness of health-focused programs, interventions, and policies, both within diverse custodial settings, upon release and reentry into the community.

Our study also underscores the need for more aggressive advocacy approaches for African Americans with respect to providing healthcare services inside jail and prison and upon reentry. It would be ideal for health-care staff involved in community corrections to work closely with health insurance programs and medical and dental professionals, with the goal of providing affordable tailored treatment to African Americans. Some examples of this might be subsidized health and dental insurance for this population; affordable or subsidized nicotine replacement therapy patches and/or tobacco cessation programs; and community "free clinics," where health-care professionals provide free or affordable medical or dental services to those in need. Health-care professionals could also contribute more hours to working inside jails and prisons, engaging in preventative treatment and education geared specifically toward African Americans' health statuses affected by tobacco use.

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