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Mass Incarceration and Subsequent Preventive Health Care: Mechanisms and Racial/Ethnic Disparities

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ABSTRACT (ENGLISH)

Objectives. To examine the associations and mechanisms between 2 indicators of mass incarceration and preventive health care use and whether these associations are moderated by race/ethnicity. Methods. We used 1997 to 2015-2016 data from the US National Longitudinal Survey of Youth 1997 (n = 7740) to examine the associations between arrest and incarceration at ages 18 to 27 years and cholesterol, blood sugar, and blood pressure screenings at age 29 years. Explanatory mechanisms included blocked access (health care coverage and medical checkup) and economic (education, employment, and income) factors. We used logistic regression to model main effects. Conclusions. Mass incarceration contributes to decreases in preventive health care use, which are explained in part by blocked access and economic factors. Public Health Implications. The decreased use of preventive health care following mass incarceration may increase the prevalence of disease and the associated costs of treatment. (Am J Public Health. 2020;110:S145-S151. doi:10.2105/AJPH.2019.305448) Results. Arrest was associated with lower odds of getting blood cholesterol, blood sugar, and blood pressure tests;incarceration was associated with lower odds of getting cholesterol and blood sugar tests; blocked access and economic factors mediated 42% to 125% of these associations. These associations were mostly consistent across race/ ethnicity.

FULL TEXT

Headnote

Objectives. To examine the associations and mechanisms between 2 indicators of mass incarceration and preventive health care use and whether these associations are moderated by race/ethnicity. Methods. We used 1997 to 2015-2016 data from the US National Longitudinal Survey of Youth 1997 (n = 7740) to examine the associations between arrest and incarceration at ages 18 to 27 years and cholesterol, blood sugar, and blood pressure screenings at age 29 years. Explanatory mechanisms included blocked access (health care coverage and medical checkup) and economic (education, employment, and income) factors. We used logistic regression to model main effects. Conclusions. Mass incarceration contributes to decreases in preventive health care use, which are explained in part by blocked access and economic factors. Public Health Implications. The decreased use of preventive health care following mass incarceration may increase the prevalence of disease and the associated costs of treatment. (Am J Public Health. 2020;110:S145-S151. doi:10.2105/AJPH.2019.305448) Results. Arrest was associated with lower odds of getting blood cholesterol, blood sugar, and blood pressure tests;incarceration was associated with lower odds of getting cholesterol and blood sugar tests; blocked access and economic factors mediated 42% to 125% of these associations. These associations were mostly consistent across race/ ethnicity. Mass incarceration-which encapsulates multiple forms of contact with the criminal justice system (e.g., police contact, arrest, incarceration, parole)-is embodied by statistics showing the scope and expansion of the criminal justice system in recent years.1 For example, between 1978 and 2017, the incarceration rate in the United States more than tripled,2 and, as of 2017, about 2.2 million individuals were incarcerated, and more than 600 000

individuals were released back into their community from carceral institutions each year.2,3 During the same time, the number of individuals with an arrest record has increased, with an estimated 25% of the adult population in the United States having some form of criminal justice contact.4

Mass incarceration has wide-ranging, negative consequences for justice-involved individuals. One line ofresearch, in particular, has recognized mass incarceration as an important social determinant of health,5,6 particularly among Black and Hispanic men, who have disproportionately higher rates of multiple forms of criminal justice contact.1,2,7 For example, formerly incarcerated and arrested individuals have higher rates of disease and infection,8 mental health problems,9 and premature mortality10 compared with their counterparts. Although a robust literature has pointed to the negative impacts of mass incarceration on health, less is known about its influence on use of preventive health care services.

Scholars of health care policy suggest that use of health care services is an important indicator of access, with preventive health care as 1 particular type of health care that individuals might use.11 Preventive health care refers to efforts to stop illness before it begins11(p214) and differs from illness-related or custodial care that are responses to detected illness. In the United States, chronic diseases-such as heart disease, cancer, and diabetes-are responsible for about 70% of deaths each year, yet these diseases are considered largely preventable through periodic medical screenings, such as cholesterol, blood pressure, and blood sugar tests, among others.12 However, not all people use preventive health care equally.13,14 Given the barriers that formerly arrested and incarcerated individuals face in accessing health care to treat their chronic illnesses,15,16 the processes surrounding mass incarceration may similarly be a meaningful social determinant of access to preventive health care.

There are multiple mechanisms that might explain the link between mass incarceration and decreased access to preventive health care. One mechanism suggests that criminal justice contact blocks access to health insurance coverage.17-19 Because of the increased use of criminal background checks by employers,20 formerly incarcerated and arrested individuals may find it difficult to obtain (and keep) jobs, especially jobs that provide health insurance benefits. Given that health care coverage often pays the cost of preventive health care, this may be 1 way that those with criminal records are less likely to access preventive care. A second mechanism suggests that criminal justice contact presents economic barriers to preventive care. Research suggests that criminaljustice contact is associated with lower educational attainment, employment, and income.21 23 This, in turn, may limit individuals' ability to afford out-of-pocket preventive services whether they are insured or uninsured. However, to our knowledge, the relationship between mass incarceration and access to preventive health care and the mechanisms that may underlie this relationship have not been examined.

Moreover, to our knowledge, no study has examined whether mass incarceration affects preventive care similarly by race/ethnicity. Given that mass incarceration is a phenomenon affecting racial/ethnic minorities1,2,7 and the existing racial/ethnic disparities in access to health insurance24 and income,25 the association between mass incarceration and preventive health care use may be more pronounced for racial/ethnic minorities. Therefore, we investigated this possibility.

Given the calls to address the direct and indirect effects ofmass incarceration on health as well as potential racial disparities,26 this study contributes to this literature in 3 ways. First, it examines the link between 2 indicators of mass incarceration measured at the individual level that capture criminal justice contact (i.e., arrest and incarceration) and 3 indicators of access to preventive health care (i.e., cholesterol, blood sugar, and blood pressure tests). Second, it examines 5 potential mechanisms between criminal justice contact and preventive health care, including blocked access (i.e., health care coverage and medical checkup) and economic (i.e., education, employment, and income) factors. Third, it examines Black-White-Hispanic differences in the association between criminal justice contact and preventive care. Together, these contributions extend the growing body of research on mass incarceration and health.

METHODS

We used 1997 to 2015-2016 data from the National Longitudinal Survey ofYouth 1997 (NLSY97).27 The NLSY97 is a nationally representative sample of8984 youths living in the United States in 1997 who were born between 1980

and 1984. The study contains 2 probability-based household samples: a nationally representative sample of6748 youths and an additional oversample of 2236 Black and Hispanic youths. Respondents were interviewed annually from 1997 to 2011 and biennially starting in 2013. Respondents were between the ages of 12 and 18 years at the first interview (1997) and between the ages of 30 and 36 years as of the most recent interview (2015-2016). The retention rate in the NLSY97 was 79% in 2015-2016.

From the full sample, we retained respondents who had complete data on all 3 of our dependent variables, which measure respondents' access to preventive health care at age 29 years (n = 7740). To address missing data on the remaining variables, we implemented multiple imputation using chained equations with the mim suite available in Stata version 15 (StataCorp LP, College Station, TX). In doing so, we created 20 imputed data sets. We calculated standard errors by using Rubin's28 rules (see Table A, available as a supplement to the online version of this article at http://www.ajph.org, for more information about the missing data and the variables).

Measures

Dependent variables. The dependent variables were 3 measures of respondents' use of preventive health care. These measures came from what is known as the Youth Health 29 (YHEA29) module, which asked respondents when they were aged approximately 29 years whether they had received a cholesterol blood test, a blood sugar test, and a blood pressure check in the past 24 months. Each measure was scored dichotomously (0 = not received; 1 = received). Respondents participated in the YHEA29 module at the 2009 through 2015-2016 interviews, depending on whether they were aged 29 years at that interview.

Focal independent variables. The focal independent variables were 2 indicators ofmass incarceration measured at the individual level that capture criminal justice contact. The first was a dichotomous indicator of whether respondents were arrested as an adult but before their YHEA29 interview (0 = no; 1 = yes). At each interview, respondents were asked whether they had been arrested by law enforcement for an illegal offense (excluding minor traffic violations) since the last interview. Those who reported being arrested were then asked for the number of times arrested and then the dates (month/year) of each arrest. We used the dates of arrest combined with respondents' date of birth to determine whether respondents were arrested between the ages of 18 and 27 years.

The second measure was a dichotomous indicator of whether respondents were incarcerated as an adult but before their YHEA29 interview (0 = no; 1 = yes). At each interview, respondents reported whether they had been sentenced to a jail, an adult corrections institution, or a juvenile corrections institution. Respondents who were sentenced to any of the 3 correctional institutions were then asked to provide the date (month/year) they began their sentence and the date they were released. We used the dates combined with respondents' date of birth to determine whether respondents were incarcerated between the ages of 18 and 27 years.

Mediators. We included 5 variables that might explain why previously arrested and incarcerated individuals are less likely to use preventive health care. Those mediators included both economic and blocked access variables measured at respondents' interview at age 29 years. Economic variables included respondents' highest grade level completed (in years), weeks worked since the date oflast interview (logged), and household income in the past year (logged). Blocked access variables included whether respondents had access to health care coverage (health insurance, health maintenance organization, or Medicaid; 0 = no; 1 = yes) and had a routine checkup with a medical doctor in the past 12 months (0 = no; 1 = yes).

Covariates. A wide range ofcovariates were measured in 1997 to account for potential sources of spuriousness. Covariates included demographic, socioeconomic, health, and behavioral characteristics that research has linked to both criminal justice contact21 and health care access.13,14 Demographic and socioeconomic characteristics included respondents' gender (female, male), race/ ethnicity (non-Hispanic White [reference], non-Hispanic Black, Hispanic, other race), birth year, urban location (rural [reference], central city, and suburbs), adolescent family structure (0 = did not live with 2 parents;

1 = lived with 2 parents), parental education (in years), and mother's age at respondent's birth (in years). Health characteristics included respondents' self-reported health (1 = poor to 5 = excellent) and health coverage as an adolescent (0 = did not have health insurance; 1 = had health insurance). Behavioral characteristics included

respondents' scores on the Armed Services Vocational Aptitude Battery (a validated measure of intelligence), a 3-item victimization index, a 5-item mean index indicating exposure to antisocial peers, gangs in neighborhood (0 = no; 1 = yes), perceived risk of arrest for stealing a car (ranges from 0%-100% chance of arrest), gang member (0 = no; 1 = yes), and self-reported delinquency (includes property, violent, and drug sales offending), cigarette use (0 = no; 1 = yes), marijuana use (0 = no; 1 = yes), and binge drinking (defined as >5 drinks on the same occasion; 0 = no; 1 = yes).

Statistical Analyses

The analyses followed Baron and Kenny's29 4-step method for assessing mediation. The first step assessed the association between criminal justice contact and each dependent variable. The second step assessed the association between criminal justice contact and each mediator. The third step assessed the association between each mediator and each dependent variable. The fourth step assessed whether the association between criminal justice contact and each dependent variable was attenuated after the introduction of the mediators; for the fourth step, we reported the proportion of the total effect that was mediated by calculating the percent change in the criminal justice odds ratio (OR) after introduction of the mediators ([ln{ORunmediated}- ln{ORmediated}] / ln{ORunmediated}) and conducted the Karlson-Holm-Breen (KHB)30 test for nonlinear mediation to determine whether the attenuation was statistically significant. Because past research has already documented the associations in step 2, we mainly focused on the associations in steps 1, 3, and 4. For step 2, we tested multivariate associations between criminal justice contact and each mediator and found them to be significant (Table B, available as a supplement to the online version of this article at http:// www.ajph.org).

We conducted all analyses in Stata/MP 15.1 and incorporated sampling weights to account for the NLSY97 survey design, the results of which are considered nationally representative of individuals who were born between 1980 and 1984 and living in the United States in 1997. We modeled dichotomous outcomes by using logistic regression.

RESULTS

Table 1 presents survey-weighted descriptive statistics. About 25.5% and 7.4% of respondents were arrested and incarcerated between the ages of 18 and 27 years, respectively. At age 29 years, the average respondent had completed 13.74 grade levels, worked 3.44 logged weeks (unlogged 59.29 weeks), and earned a logged household income of 10.55 (unlogged $67 196); and about 71.5% and 53.2% reported having health coverage and receiving a medical checkup, respectively. In addition, the sample was about 65.4% nonHispanic White, 16.4% non-Hispanic Black, 13.2% Hispanic, and 5.0% other race. At age 29 years, about 30.1%, 33.1%, and 77.0% of respondents received a blood cholesterol, blood sugar, and blood pressure screening in the past 24 months, respectively (Figure 1).

Table 2 presents logistic regression models predicting preventive health care outcomes from criminal justice contact. The "Arrest" part of Table 2 shows the multivariate associations between arrest and preventive health care before (unmediated) and after (mediated) the introduction of mediators. For the unmediated associations, compared with individuals who were not arrested between the ages of 18 and 27 years, those who were arrestedhad35% (OR = 0.65; 95% confidence interval [CI] = 0.56, 0.75) lower odds of getting a cholesterol blood test, 25% (OR = 0.75; 95% CI = 0.66, 0.86) lower odds of getting a blood sugar test, and 18% (OR = 0.82; 95% CI = 0.71, 0.94) lower odds of getting a blood pressure check at age 29 years.

The unmediated associations in the "Incarceration" part of Table 2 show that incarceration predicted 37% lower odds of getting a cholesterol blood test (OR = 0.63; 95% CI = 0.50, 0.81) and 22% lower odds of getting a blood sugar test (OR = 0.78; 95% CI = 0.62, 0.98). However, the association between incarceration and getting a blood pressure check (OR = 0.93; 95% CI = 0.75, 1.15) was nonsignificant. One possible explanation for this nonsignificant finding is that individuals may receive blood pressure checks as part oftheir health care while incarcerated. Supplemental analyses that removed respondents who were ever incarcerated during the preventive health care reference period (age 28-29 years) showed that the association between incarceration and blood pressure check was still nonsignificant, suggesting that this explanation did not hold. To illustrate the magnitude of the unmediated associations, Figure 1 shows the predicted probability of preventive care use for those with and

without criminal justice contact.

Next, we introduced mediating variables that may explain why individuals with criminal justice contact have lower preventive health care. Across the models in the "Arrest" part of Table 2, the association between arrest and the odds of preventive care were attenuated by 42% for blood cholesterol test (OR = 0.78; 95% CI = 0.67, 0.92), 55% for blood sugar test (OR = 0.88; 95% CI = 0.76, 1.02), and 125% for blood pressure check (OR = 1.05; 95% CI = 0.89, 1.23), showing evidence of mediation. Except for the blood cholesterol model, arrest was no longer statistically associated with preventive care in the mediated models. KHB tests suggested that these were all significant reductions in the direct effects (P< .001). In addition, Table 2 shows that education (except in the blood sugar model), health care coverage, and medical checkup were positive and significantly related to preventive health care; weeks worked was not significantly related to preventive health care (expect in the blood sugar model, in which it was negative and significant, which is the opposite of the direction expected); income was not significant. Supplemental analyses (not shown) that entered each mediator separately indicated that each mediator (except weeks worked) had a significant mediating effect, including income. Further supplemental analyses revealed that education attenuated the mediating effect of income. Together, these findings indicate that between 42% and 125% of the association between arrest and preventive care was explained by blocked access and economic variables.

The "Incarceration" part ofTable 2 shows that the association between incarceration and preventive care was attenuated by 54% for cholesterol blood test (OR = 0.81; 95% CI = 0.62, 1.07) and 71% for blood sugar test (OR = 0.93; 95% CI = 0.73, 1.20); in both cases, the incarceration OR was no longer statistically significant, and KHB tests indicated that these were significant reductions in the direct effect (P< .001). In addition, Table 2 shows that education (except in the blood sugar model), health care coverage, and medical checkup were positive and significantly related to preventive health care; weeks worked was negative and significantly associated with blood sugar test but not cholesterol test; and income was not associated with either outcome. Supplemental analyses (not shown) that entered each mediator separately indicated that each mediator (except weeks worked) had a significant mediating effect, including income. Further supplemental analyses revealed that education attenuated the mediating effect of income. Because the direct effect of incarceration on blood pressure check was not significant, we do not present corresponding mediated models. Together, these findings indicate that 54% of the association between incarceration and cholesterol blood test and 71% of the association between incarceration and blood sugar test was explained by the mediators.

We also examined the extent to which the association between criminal justice contact and preventive care differed by race/ethnicity. To do so, we created a polytomous variable representing each combination of race/ethnicity and criminal justice contact and used this variable to predict preventive health care by using logistic regression (Table 3). Those analyses revealed that, relative to the reference category (non-Hispanic Whites, without criminal justice contact), arrested Whites had lower odds of all 3 forms of preventive care, and arrested Blacks and incarcerated Whites had lower odds of getting a cholesterol test. We also ran post hoc tests that specifically examined whether the ORs for non-Hispanic Whites with criminal justice contact were significantly different from the ORs for other racial/ethnic groups with criminaljustice contact. The post hoc analyses revealed that most of the ORs were not significantly different from one another. There were a few exceptions. Arrested Hispanics had higher odds of getting both a cholesterol blood test and a blood sugar test relative to arrested Whites. Non-Hispanic Black participants who were arrested had higher odds of getting a blood pressure check relative to arrested Whites. Incarcerated Hispanics had higher odds of having a blood sugar test relative to incarcerated Whites. Together, the analyses suggest that the associations between criminal justice contact and preventive care were mostly consistent across race/ethnicity, but in a few instances, there were better outcomes associated with groups other than non-Hispanic White.

Lastly, we subjected our main findings to sensitivity checks by replicating the associations between criminal justice contact and preventive health care by using propensity score weighting31 and entropy balancing32; these are methods that are thought to be more rigorous by reducing the potential impact of selection bias. In all cases, the results were substantively similar to the main findings (Table C, available as a supplement to the online version of this article at http:// www.ajph.org).

DISCUSSION

Using nationally representative data from the NLSY97, our study represents the first examination, to our knowledge, of the associations between criminal justice contact and preventive health care use. The results suggest 3 main conclusions. First, compared with those who did not have criminal justice contact from ages 18 to 27 years, those who were arrested or incarcerated tended to have a lower likelihood of using preventive health care. Net of a wide range of covariates, previously arrested individuals reported a lower likelihood ofgetting blood cholesterol, blood sugar, and blood pressure screenings at age 29 years, and previously incarcerated individuals reported a lower likelihood of getting a blood cholesterol and blood sugar screening (but not a blood pressure check) at age 29 years. These findings extend previous research by suggesting that not only are previously arrested and incarcerated individuals more likely to experience a wide range of health problems7-10 but they are also less likely to use preventive health care, which could potentially prevent or mitigate many health problems. Future research should consider examining whether criminal justice contact influences other forms of preventive care (e.g., immunizations and mental health screenings).

Second, our findings suggest that much of the difference in preventive health care use among those with and without criminal justice contact was explained by economic and blocked access variables. The 1 exception was employment, which was negatively correlated with blood sugar test; such a finding-although unexpected-has been documented in at least 1 other study that showed that high hours worked sometimes constrains time for accessing health care.33 This indicates that mass incarceration negatively influences preventive care use-in part, by reducing formerly arrested and incarcerated individuals' access to health care coverage and medical services and their ability to afford those services. In this way, criminal justice contact functions both as a social determinant of health itself and as a predictor of other important social determinants of health.

Third, we found that the association between criminal justice contact and preventive care was mostly similar across race/ethnicity, although there were a few differences ACKNOWLEDGMENTS

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Note. All errors or omissions are the authors' and the authors' alone.

CONFLICTS OF INTEREST

The authors have no conflicts ofinterest to report.

HUMAN PARTICIPANT PROTECTION

Our secondare data analysis was deemed exempt from institutional review board review at the University of Louisville.

Sidebar

CorrespondenceshouldbesenttoAlex O. Widdowson, 2301 South ThirdSt, Louisville, KY40292 (e-mail:alex.widdowson@ louisville.edu). Reprints can be ordered at http://www.ajph.org by clicking the Reprints link. This article was accepted October 14, 2019.

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DETAILS

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Incarceration Harms Health: Homer Venters's Book on Rikers Island Jails

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FULL TEXT

Incarceration Harms Health: Homer Venters's Book on Rikers Island Jails

Life and Death in Rikers Island By Homer Venters Baltimore, MD: Johns Hopkins University Press; 2019 Paperback: 201 pp; $26.95 ISBN-10: 1421427354 ISBN-13: 978-1421427355

Sometime after having read Homer Venterss compelling Life and Death in Rikers Island we are still astounded, and not solely because of the cruelty, neglect, and inhumane treatment. No, we remain dismayed because of (1) lack of transparency by public agencies; (2) public apathy to these conditions, even when they are made public; and (3) conditions that are tolerated by government agencies in one of the worlds most developed countries, even as New York City authorities and prison officials in other jurisdictions are repeatedly found liable for preventable deaths from neglect, mismanagement, and brutality. And these authorities, as with others throughout the United States, keep many ofthese issues outside the public eye for political purposes. When they do become public, it is shameful that the broader public conscience is not appalled by the heinous living conditions in jails and prisons. All the more so because it occurs in one of the most so-called progressive cities in the United States.

Homer Venters is the former chief medical officer for the New York City adult jails, including those on Rikers Island. In his role, Venters demonstrated courage and leadership, using data and his medical authority, to raise important questions about the dual loyalty that health practitioners wrestle with in attempting to challenge excessive punitive conditions and practices. Venters is a role model for using data as a tool for both epidemiology and human rights. In his book, he describes rigorous case reviews and epidemiological studies that demonstrate causes of harm.

Although Rikers Island jails house almost 8000 people on an average day, this is less than halfof its peak in the 1990s. Alternatives to incarceration and bail reform have been quite successful, especially those tailored to people with a serious mental illness. As a result, New York City has the lowest carceral rate of large cities in the United

States. Notwithstanding, Venters describes ongoing inhumane conditions.

REAL CASES AND DETAILED TRAGEDIES

The book focuses on real cases, tragedies detailed in nine insightful chapters, illustrating violence and injury, solitary confinement, serious mental illness, and sexual assault by both incarcerated persons and officers. Furthermore, it details lack of transparency, prison mismanagement, and the negative impact on the health of incarcerated people. Venters portrays the plight of correctional officers, who also are victims, working in degrading conditions with little support.

Notwithstanding the behavior of his custodial colleagues and despite their lack of accountability and transparency, Venters patiently designed studies to provide objective data that should drive change in these jails. His teams analysis of the effects of solitary confinement, with its dramatic consequences on health, was one of the 2014 AJPH Papers of the Year.

As an example, Venters describes a death by self-harm- swallowing highly concentrated soap. Jason Ecchevaria wanted to draw attention to his desperate situation and neglect; he wanted to have contact with humans who cared about those who suffer the harsh conditions of confinement. Security staff refused to let Ecchevaria out of solitary confinement for access to health care, leading to his death. People in neighboring cells heard him scream for help. He vomited blood, bile, and stomach acid and ultimately died with an eroded esophagus. Venters describes this as one of the longest and most painful deaths he has investigated. One can hardly imagine the cruelty of staff to let someone die right in front of them.

According to Venters, analyses of jail tragedies rarely show the dehumanizing infrastructure and mismanagement of the institutions as causal. Instead offocusing on systems issues, he claims, such analyses too often focus blame on individuals, and little effort is made to provide more system transparency and accountability.

SOLITARY CONFINEMENT

Many cases described in the book point to the overuse of solitary confinement at Rikers, which has a devastating negative impact on health and an increased risk of death that persists after release, particularly for those with mental illness and who are younger.2-4 The death of Kalief Browder, who entered Rikers at age 16 years, tragically illustrates these risks.

The UN Special Rapporteur on torture, Juan E. Mendez, recommended a ban on prolonged or indefinite solitary confinement as punishment or as an extortion technique; he opines that this could amount to torture, especially when used as punishment, during pretrial detention, or for a prolonged period for juveniles or persons with mental disabilities.

According to Venters, there is a need for organizational change, which includes health care. The prison health staff should be independent of the custody staff and affiliated with health authorities, yet they should interact and cooperate effectively (http:// bit.ly/2Ohuii0).5 Furthermore, care must be overseen by independent entities. In New York City, this has already happened. The New York City Health and Hospitals Corporation provides medical and mental health care, and the New York City Board of Correction provides oversight. Both are independent public agencies, by contrast to private vendors used in other jurisdictions. For 15 years New York City contracted out medical care at Rikers to a private vendor, Corizon. This ended in 2016, when the Health and Hospitals Corporation assumed responsibility for providing care directly by its employees. As a public entity, it is now more difficult to evade accountability.

#CLOSErikers

The book leaves no doubt that Rikers creates harm to many and even kills some-the place is rotten and should be closed, as it will be, in large part because of the activism of formerly incarcerated people in efforts such as the #CLOSErikers campaign. But what then? Venters makes constructive suggestions and describes the resistance to building new jails in urban communities. Some people view the proposal to create smaller, more humanely designed jails in the boroughs as acceptable, and others think no new jails should be constructed and Rikers Island should be shuttered-shuttered, with no consideration of the unintended consequences of no jail at all.

According to Venters, Rikers costs$132019percapitaperyear, with even higher real costs, considering the

consequences of imprisonment for families, workplaces, and communities. How can this be justified? There is hardly any scientific evidence that imprisonment has positive effects on incarcerated people or the communities to which almost all will return. Harding et al. state, "Imprisonment is an ineffective long-term intervention for violence prevention, as it has, on balance, no rehabilitative or deterrent effects after release. "6(p671) Furthermore, investment in alternatives to incarceration will likely yield more benefit than does incarceration.

The United Nations' Optional Protocol to the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, which has still not been signed by the US government, foresees national prevention mechanisms with the aim of preventing torture and other cruel, inhumane, or degrading treatment or punishment (https://www.ohchr.org). In 1987, the 47 Council ofEurope countries took one step further by adopting a convention to prevent torture. In 1989 it created the Committee for the Prevention of Torture, which has extended rights and is enabled to visit every place of detention at any time in every member country (https://www.coe.int/en/web/cpt/home).

HARMFUL INSTITUTIONS

Venters concludes, "American jails are horribly run institutions. By design and by incompetence, jails create the risk of death, injury, and illness for the incarcerated" (p. 135). These are strong statements, backed up with depictions of mainly young, vulnerable patients who died in custody or shortly thereafter. This is most astonishing in the face ofa decade of public pressure led by formerly incarcerated people to reduce imprisonment in New York City.

Former Chief Justice Warren E. Burger (1907-1995) wrote, "To put people behind walls and bars and do little or nothing to change them is to win a battle, but lose a war. It is wrong. It is expensive. It is stupid. "7(p439) Venters's book impressively demonstrates that too little has been done at Rikers to prevent suffering, violence, and death.

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Sidebar

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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DETAILS

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Negative Police Encounters and Police Avoidance as Pathways to Depressive Symptoms Among US Black Men, 2015–2016

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ABSTRACT (ENGLISH)

Objectives. To examine negative police encounters and police avoidance as mediators of incarceration history and depressive symptoms among US Black men and to assess the role of unemployment as a moderator of these associations. Methods. Data were derived from the quantitative phase of Menhood, a 2015-2016 study based in Washington, DC. Participants were 891 Black men, 18 to 44 years of age, who completed computer surveys. We used moderated mediation to test the study's conceptual model. Results. The results showed significant indirect effects of incarceration history on depressive symptoms via negative police encounters and police avoidance. Unemployment moderated the indirect effect via police avoidance. Participants with a history of incarceration who were unemployed reported significantly higher police avoidance and, in turn, higher depressive symptoms. Moderation of unemployment on the indirect effect via negative police encounters was not significant. Conclusions. There is a critical need to broaden research on the health impact of mass incarceration to include other aspects of criminal justice involvement (e.g., negative police encounters and police avoidance) that negatively affect Black men's mental health. (Am J Public Health. 2020;110:S160-S166. doi:10.2105/AJPH.2019.305460)

FULL TEXT

Headnote

Objectives. To examine negative police encounters and police avoidance as mediators of incarceration history and depressive symptoms among US Black men and to assess the role of unemployment as a moderator of these associations. Methods. Data were derived from the quantitative phase of Menhood, a 2015-2016 study based in Washington, DC. Participants were 891 Black men, 18 to 44 years of age, who completed computer surveys. We used moderated mediation to test the study's conceptual model. Results. The results showed significant indirect effects of incarceration history on depressive symptoms via negative police encounters and police avoidance. Unemployment moderated the indirect effect via police avoidance. Participants with a history of incarceration who were unemployed reported significantly higher police avoidance and, in turn, higher depressive symptoms. Moderation of unemployment on the indirect effect via negative police encounters was not significant. Conclusions. There is a critical need to broaden research on the health impact of mass incarceration to include other aspects of criminal justice involvement (e.g., negative police encounters and police avoidance) that negatively affect Black men's mental health. (Am J Public Health. 2020;110:S160-S166. doi:10.2105/AJPH.2019.305460)

Mass incarceration is a potent reminder that the historical legacies of slavery, the Black Codes, and Jim Crow

endure for US Black communities.1 In a 2018 report to the United Nations, the Sentencing Project detailed the magnitude of racial inequities in mass incarceration: African Americans are more likely than White Americans to be arrested; once arrested, they are more likely to be convicted; and once convicted, they are more likely to experience lengthy prison sentences.2

A vast theoretical3 and empirical literature documents the deleterious impact of mass incarceration on the health not just of those incarcerated1,3,4 but also their families5 and, in the case of neighborhoods characterized by high rates of incarceration, entire communities.6 Yet, critical empirical gaps exist about the influence of the full spectrum of mass incarceration4(p46)-stop and frisk, hyperpolicing and aggressive policing, arrest, cash bail, sentencing, incarceration, parole, and reincarceration, for example-on health in Black communities. Our aims in this study were to examine negative police encounters and police avoidance as mediators of incarceration histories and depressive symptoms among US Black men and to assess the role of unemployment as a moderator.

Police encounters in Black communities are a critical antecedent to mass incarceration but are an understudied link in the health inequities pathway. Black and White communities have starkly and distinctly different experiences with police. Relative to White people, police speak more disrespectfully to Black people,7 are approximately 5 times more likely to shoot Black people,8 and typically use more excessive nonlethal and lethal force with Black suspects.9 The Talk-a routine conversation in which Black parents educate their children, typically sons, about how to minimize the chance of injury and death if stopped by police-accentuates the ubiquity of Black peoples negative interactions with police.

Black communities also bear the disproportionate brunt of hyperpolicing, an aggressive form of policing characterized by intensive and extensive police surveillance, the noticing of crime in racial/ethnic minority neighborhoods, and the designation of entire neighborhoods and residents as potential or actual criminals.4 Hyperpolicing highlights both the breadth and depth of the criminal justice systems reach [with respect to] health and well-being. 4(p46) Hyperpolicing also transcends racial/ethnic minority neighborhoods. In recent years, a slew of cell phone videos have captured the alarming frequency with which White people perturbed by Black peoples most mundane acts (e.g., 2 Black men awaiting a colleague in a Starbucks, a Black male realtor monitoring properties, Black people barbequing in a park) have summoned police to serve as what Phillip Atiba Goff, president of the Center for Policing Equity, has termed personal racism concierges.10

ABOUT THE AUTHORS

Black men are the focus of the current research. Black boys and men have been subjected to aggressive policing at every stage in the criminal justice system,11 but so too have Black girls, women, and transgender people. As such, it is important to note that our study's specific focus on Black men is not meant to connote that negative police encounters and mass incarceration are the sole purview of Black men.

Nonetheless, the impact of mass incarceration on Black men is staggering. Black males represent just 6% of the US population but in 2017 were sentenced to prison at a rate almost 6 times greater than that of their White counterparts.12 The disparity is particularly stark for younger Black males; those 18 and 19 years old are approximately 12 times more likely to be imprisoned than their White counterparts. And although the latest federal prison statistics document that the imprisonment rate among Black males dropped by one third in 2017-reaching the lowest rate in almost 28 years-this promising news is outweighed by the reality that Black men continue to bear the disproportionate brunt of the full spectrum of mass incarceration.11

NEGATIVE POLICE ENCOUNTERS AND POLICE AVOIDANCE

Police encounters in Black communities include a broad continuum of interactions that range in severity and lethality, such as racial profiling, stop and frisk, police harassment, arrests, hyperpolicing, aggressive policing, police brutality (e.g., chokeholds13), and nonlethal and lethal police shootings. Although a description of each police encounter type is beyond the scope of this article, 2 types are disturbingly commonplace for Black men: stop and frisk and fatal police shootings. These negative encounters often lead Black men to actively avoid the police.

Stop-and-frisk policies allow police to detain and question pedestrians for whom there is a "reasonable suspicion" that they have committed, are committing, or are about to commit a crime and pat them down in search of a weapon.

Relative to White men, Black men are disproportionately more likely to be victims of stop-and-frisk searches even though White men, when stopped, are more likely to be found with weapons.14 In Washington, DC, the site ofour study, Black residents account for 83% of stop-and-frisk searches despite representing just 47% of the population.15 As with stop and frisk, Black men are also the group most likely to be shot and killed by police.1,11,13 Underscoring the link between structural racism and fatal police shootings of Black people is empirical evidence that a state's racism index is a significant predictor of Black-White disparities in police shootings of victims not known to be armed.16 This harsh reality is well documented in mass and social media coverage of cell phone and surveillance camera encounters in which police officers have fatally shot Black boys and men, most of whom were unarmed. Fear and mistrust of and animus for police are recurrent themes in qualitative research with Black men17 and scholarship focused specifically on the policing ofBlack men.11,13 We conceptualize Black men's behaviors to avoid police as a specific type of system avoidance, the practice by which people with prior criminal justice system experience- "those who have been stopped, arrested, convicted or incarcerated"18(p19)-avoid contact with and surveillance by medical, financial, employment, and educational institutions that maintain formal records.18

DEPRESSIVE SYMPTOMS

Despite mounting advocacy to conceptualize excessive police violence and aggressive policing as public health concerns,19-21 research on negative police encounters as social-structural drivers ofhealth inequities in Black communities is rare. Among the small group of studies documenting the harmful impact of aggressive policing on health are those that show that living in neighborhoods where police use more aggressive pedestrian stop and frisks is significantly associated with negative health outcomes for Black and Latino residents22; that Black and Latino men who report more frequent police encounters, particularly those perceived as more intrusive and unfair, report higher rates of trauma and anxiety23; and that frequent reports of discriminatory police and law enforcement encounters are associated with higher depressive symptom scores among Black men.24

Ecosocial25 and biopsychosocial26 theoretical frameworks posit that repeated exposures to social-structural stressors such as racism and, in the case of our study, negative police encounters and police avoidance trigger severe psychological and physiological stress responses that result in negative health outcomes. Because Black people on parole and probation are disproportionately more likely than their White counterparts to be monitored aggressively and reincarcerated for minor or technical violations,27 Black men with incarceration histories may have more negative police encounters and motivations to avoid police. As such, negative police encounters and police avoidance are potential mechanisms in the link between incarceration histories and depressive symptoms. In light of empirical evidence that a history of incarceration28 is associated with depression, especially among young Black men,29 we examined depressive symptoms as our main outcome.

Incarceration, unemployment, and depressive symptoms are inextricably linked among Black men. Because multiple socialstructural stressors (e.g., having a criminal record and being unemployed) are deleterious to mental health,25,26 we assessed whether unemployment moderates the indirect link between incarceration history and depressive symptoms via negative police encounters and police avoidance.

In our study, we addressed substantial gaps in public health research about the effects of criminal justice exposure on Black men's health. Informed by ecosocial and biopsychosocial theoretical frameworks, we tested a conceptual model of negative police encounters and police avoidance as mediators of the relationship between incarceration history and depressive symptoms among a sample of Black men in Washington, DC. We also assessed whether current unemployment moderated these mediated effects (Figure 1).

METHODS

We collected data between 2015 and 2016 as part of Menhood, a mixed-methods study focusing on the effects of individual and neighborhood-level social-structural stressors (e.g., racial discrimination, incarceration, unemployment) and resilience on the sexual HIV risk and protective behaviors of Black men in Washington, DC. Eligible participants self-identified as non-Latino Black/African American cisgender men and were between 18 and 50 years of age (qualitative phase participants) and 18 and 44 years of age (quantitative phase participants; reflecting the highest HIV prevalence age range). Participants screened for eligibility for the quantitative phase of the

study had to live in the neighborhood in which they were screened and had to report having had sex within the preceding 6 months. All participants received a $50 cash incentive.

Qualitative Phase

Focus group participants were from 9 socioeconomically diverse neighborhoods in Washington, DC. In 2013 and 2014, recruiters approached and screened potential participants in public settings (e.g., streets, corner stores, barbershops). Focus groups ranged from 5 to 11 participants, lasted 90 to 120 minutes, were conducted by a trained Black male facilitator, were digitally audio-recorded and professionally transcribed, and were analyzed via thematic analysis (focus group demographics are highlighted in Table A, available as a supplement to the online version of this article at http://www. ajph.°rg).

Focus group narratives informed this study's quantitative measures of negative police encounters and police avoidance. In response to questions about what one might see during a visit to participants' neighborhoods, respondents-65% of whom reported a history of incarceration-frequently recounted negative encounters with police, most typically hyperpolicing, stop and frisk, harassment, and violence. Focus group narratives also detailed a variety of strategies that respondents reported using to avoid interactions with police such as planning their walking or driving routes and limiting the number of Black men with whom they walked or drove.

Quantitative Phase

We used a sampling frame ofcensus block groups with at least 40% Black households for the quantitative phase. This yielded 256 census block groups (from a total of450) from which we randomly selected addresses using the US Postal Service's Delivery Sequence File. We sent letters about the study to prospective households before the interview team's arrival. Teams of 2 Black interviewers then visited identified households to screen for eligibility, obtain written informed consent, and collect the data. Participants completed an interviewer-administered computer-assisted personal interviewing survey with an audio-computer-assisted selfinterview section including questions about sexual behavior (these data were not included in our analyses). The response rate was 80%.

Measures

Incarceration history. Participants' incarceration history was assessed with a single yes or no question: "Have you ever been incarcerated (i.e., confined in jail or prison while waiting for a trial or after being convicted ofa crime) since turning 18 years old?"

Police encounters. Participants responded to 12 questions about the frequency of their encounters with police over the preceding 12 months (e.g., "How often have the police asked you for your photo ID?" and "How often have the police stopped and questioned you?") developed from focus group findings. Response options ranged from 0 (never) to 5 (more than 10 times). We used the mean ofthe 12 items as an indicator for this variable. The Cronbach a value for this measure was 0.94.

Police avoidance. Participants responded to 6 questions about strategies used to avoid police (e.g., "How often do you watch how you dress to avoid getting harassed by the police?" and "How often do you drive in a way to make sure that you do not attract attention from the police?") developed from focus group findings. Response options ranged from 0 (never) to 3 (very often). We used the mean of the 6 items as an indicator of police avoidance. The Cronbach a value was 0.88.

Depressive symptoms. Participants responded to the 10-item Center for Epidemiologic Studies Depression Scale30 to assess the frequency ofdepressive symptoms in the preceding 2weeks (e.g., "You felt lonely " and "Yoursleep was restless"). Two positively worded items were reversed so that higher mean scores reflected higher levels of depressive symptoms. Response options ranged from 0 (rarely or none of the time) to 3 (all of the time). We used the sum of the 10 items as an indicator of depression. The Cronbach a value was 0.72.

Covariates. Sociodemographic characteristics included as covariates were

1 age;

2. education, ranging from 1 (some high school) to 5 (graduate degree);

3. current unemployment (0 = employed, 1 = unemployed); and

4. relationship status, ranging from 0 (single [single, widowed, or divorced]) to 1 (committed [married or cohabitating

partnership]).

Statistical Analysis

Moderated mediation occurs when the strength of an indirect effect is contingent on the level of a moderator variable. On the basis of our conceptual model (Figure 1), we hy-pothesized that the link between incarceration history and depressive symptoms would be mediated by negative police encounters and police avoidance and that these indirect effects would be stronger for unemployed participants. To test this hypothesis, we employed a first-stage moderation model (model 8) from PROCESS macro version 3.4,31 with 10 000 bootstrapping resamples used to produce 95% bias-corrected confidence intervals (CIs) for the indirect effects. To assess the significance of the moderated pathways, we used the index of moderated mediation.31 Statistical significance was set at $P < .05$. We used SPSS version 25 (SPSS Inc, Chicago, IL) in conducting all of our analyses. Because we excluded 43 cases owing to missing data for one or more of the included variables, our analytical sample size for the moderated mediation analysis was 848.

RESULTS

Table 1 shows the sample's demographic characteristics and descriptive statistics for negative encounters with police, police avoidance, and depressive symptoms, for the entire sample and separately by incarceration history. Results from the moderated mediation analysis (Table 2) indicate that the direct effect of incarceration history on depressive symptoms was not significant regardless of unemployment status. The indirect effect of incarceration history on depressive symptoms mediated by negative police encounters was significant regardless ofunemployment status (employed: effect = 0.049; 95% CI = 0.018, 0.086; unemployed: effect = 0.058; 95% CI = 0.021, 0.103). The moderated mediation index for negative police encounters was not significant (index = 0.009; 95% CI = -0.014, 0.037), indicating no significant differences by unemployment status for the indirect effect via negative police encounters.

The indirect effect ofincarceration history on depressive symptoms mediated by police avoidance was significant for both employed (effect = 0.023; 95% CI = 0.005, 0.046) and unemployed (effect = 0.047; 95% CI = 0.013, 0.085) men. The moderated mediation index in this case, however, was significant (index = 0.024; 95% CI = -0.003, 0.055), indicating that the indirect effect of incarceration history on depressive symptoms via police avoidance was significantly higher for unemployed men.

DISCUSSION

Policing is a critical step in the mass incarceration pipeline for Black boys and men. Policing has historically been the purview of disciplines such as criminology and law, not public health. Consequently, there is a considerable void of research on police encounters as a social-structural driver of mass incarceration and health inequities. Notably, our study is one of the first to demonstrate that negative police encounters and police avoidance are empirically documented pathways in the incarceration history and depression link for Black men.

Our study's results echo burgeoning advocacy to consider police violence a critical public health issue20,21,24 with at least 3 noteworthy empirical contributions. First, our results showed that, for Black men with incarceration histories, police interactions need not rise to the level of the excessive violence that characterizes most mass and social media accounts to have an impact on depressive symptoms. For example, most of the items on the negative police encounter measure assessed police interactions that were nonviolent (e.g., being approached for just standing on the street) or deemed harassing (being harassed while outside of one's home or in a public place). Just 2 questions assessed violent (e.g., being pushed or hit by a police officer) and threatening (e.g., having police point a gun at you) actions.

This finding has important implications for future research and interventions involving police violence. Namely, it suggests that future research on Black men's police encounters should assess a broader continuum of police interactions, ranging, for example, from racial profiling to excessive violence. And because racial profiling presages "almost every stop, frisk, search, assault, or killing of Black boys and men,"11(pxix) our research also bolsters the need for implicit racial bias training to address all aspects of police interactions with Black people, not just aggressive encounters or shootings.2

A second contribution highlights one of our most interesting findings, namely that police avoidance mediates the incarceration history and depressive symptoms pathway. Ecosocial and biopsychosocial theoretical frameworks help explain how avoidance behaviors may get embodied.25 Whereas police avoidance may be a coping mechanism for Black men without an incarceration history, for those who have been incarcerated, the cumulative stress and hypervigilance needed to avoid police may become maladaptive if the stress of engaging in these strategies depletes the very psychological resources needed to protect against depressive symptoms. As for the mediating effects of negative police encounters, as previous studies have shown, these encounters may be directly or vicariously traumatic and stressful22; psychological responses may be exacerbated for men who fear reincarceration. Negative encounters with police may also be associated with trauma experienced firsthand, incarceration, or vicarious trauma from having observed police violence.17

Finally, given the relative dearth ofresearch on the mechanisms that link incarceration and Black men's depressive symptoms,28 our study highlights a need for additional research to better understand the pathways by which police avoidance affects depressive symptoms. We found that the individual effects of negative police encounters and police avoidance were significant for men with incarceration histories regardless of unemployment status. The effects ofpolice avoidance were especially strong among participants who both had incarceration histories and were unemployed. A possible explanation for this result is that these participants may be more likely to stay at home, which is a successful strategy for avoiding police but not for reducing depressive symptoms (e.g., by visiting friends and family for social support or spending time outdoors).

Limitations

Our study should be considered within the context of 5 limitations. First, the study's cross-sectional design precludes causal inferences about relationships between variables. Second, the incarceration measure assessed lifetime incarceration only. There is a need for future research to assess the impact of both current and previous incarceration on depressive symptoms to account for divergences in short-term and long-term effects.28 For example, depressive symptoms may worsen after incarceration as returning citizens face a proliferation of stress (e.g., finding a job, financial or material hardships, and returning to children, romantic partners, and families) related to their community reintegration.28 The absence of information about the timing of incarceration (e.g., time since last release) also limited our ability to assess how or whether negative police encounters reported in the preceding 12 months might have led to incarceration. Similarly, we lacked information about the timing ofpolice avoidance behaviors.

Third, to limit the exorbitant recruitment costs associated with recruiting Black men between 18 and 44 years of age, we restricted the sampling frame to those who lived in census block groups that were at least 40% Black. Consequently, our sample does not reflect the experiences of Black men who live in more socioeconomically and racially/ethnically diverse Washington, DC, neighborhoods.

Fourth, although the measure that we used to assess depressive symptoms has been validated with Black men, there are legitimate concerns that the criteria informing the instrument neglect how depressive symptoms manifest in Black men by emphasizing more emotionfocused symptoms (e.g., crying) and obscuring the more culturally and masculinity-specific depressive symptoms that many Black men express (e.g., restricted emotionality, anger, aggression, sleep disturbances).29,32 Finally, although our results may be generalizable to other predominantly low- and middle-income Black men who live in urban settings, the extent to which the results are generalizable to uppermiddle-class men and those who live in rural areas is unknown.

Conclusions

Our research lays the groundwork for future studies of how negative police encounters and police avoidance may mediate the relationship between mass incarceration and health in other Black populations such as girls, women, and transgender people. One theoretical implication of our work is that, pursuant to research on the collateral damage of mass incarceration,6,22 future research in this area should conceptualize Black men's incarceration histories and experiences with police not simply as individual-level demographic or risk factors but rather as larger social-structural contextual determinants of health inequity.6

Our study has obvious and important implications for policy, including those addressed in the 2018 American Public Health Association policy statement Addressing Law Enforcement Violence as a Public Health Issue.21 In addition, our study highlights a critical need for implicit racial bias training for police to reduce negative police encounters, hyperpolicing, aggressive policing, and fatal police shootings of Black men. There is also a need to repeal stop-and-frisk laws in light of their racially disparate impact on Black men, most of whom are found innocent,14 and empirical evidence indicating that stop and frisks are associated with negative health outcomes (e.g., greater odds of an asthma episode22) as well as trauma and anxiety.

Our research also underscores a dire need for structural interventions to reduce personal racism concierge10 calls. Recent initiatives in which city (e.g., Grand Rapids, MI) and state (e.g., New York, Michigan) lawmakers have introduced legislation to criminalize calls to police involving racially biased complaints against people of color offer a potential, albeit difficult to enforce, remedy.10

It is noteworthy that Black men's qualitative focus group narratives, as opposed to the existing theoretical and empirical literature, shaped our examination of negative police encounters and police avoidance. This affirms 2 key principles of critical health equity research. First, because many qualitative methods align epistemologically with critical approaches that emphasize the dismantling of oppressive structures, they are invaluable for research on social-structural drivers of health inequities.33 Second, these methods bolster core tenets of critical theoretical frameworks (e.g., intersectionality

and critical race theory34) regarding the necessity and utility of centering the experiences of marginalized groups such as Black men to better ground research and inform multilevel interventions aimed at reducing health inequities and improving health and well-being. >4jPI-l

CONTRIBUTORS

L. Bowleg conceptualized the study and wrote the article. A. M. del Río-González helped conceptualize the study, conducted the statistical analyses, and wrote the results section. M. Mbaba wrote the methods section and assisted with literature reviews. C. A. Boone conducted literature reviews. S. L. Holt helped conceptualize the study and provided critical feedback on the article.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

HUMAN PARTICIPANT PROTECTION

The institutional review board at George Washington University approved all ofthe study procedures. All study participants provided informed consent.

Sidebar

All of the authors are with the Department of Psychological and Brain Sciences, George Washington University, Washington, DC.

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DETAILS

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Quantifying the Restrictiveness of Local Housing Authority Policies Toward People With Criminal Justice Histories: United States, 2009–2018

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ABSTRACT (ENGLISH)

Objectives. To quantify variation in the restrictiveness of local public housing authority policies related to the admission and eviction of people with criminal justice histories. Methods. We conducted content analysis of housing authority policy documents for US cities with a population of 100 000 or more (n = 152). Factor analysis identified policy provisions to create a restrictiveness score (range = 0-8). We explored associations between restrictiveness

scores and city-level measures of racial/ethnic diversity, racial/ ethnic neighborhood segregation, ideology, and public housing scarcity. Results. Eight policy provisions, 6 relating to consideration of mitigating circumstances, explained 71.0% of the variance in housing authority policy provisions related to criminal justice histories. We observed small but significant positive associations between restrictiveness scores and racial/ethnic diversity (r =0.22) and neighborhood segregation (r =0.18). There was no correlation between restrictiveness scores of housing authorities within the same state (intraclass correlation = 0.0002). Conclusions. Housing authority policies vary substantially regarding the circumstances under which people with criminal justice histories can obtain and retain public housing. Exposure to constellations of policy provisions that might institutionalize health inequities and increase health risk among people with criminal justice histories can be quantified through a systematic process. (Am J Public Health. 2020;110:S137-S144. doi: 10.2105/AJPH.2019.305437)

FULL TEXT

Headnote

Objectives. To quantify variation in the restrictiveness of local public housing authority policies related to the admission and eviction of people with criminal justice histories.

Methods. We conducted content analysis of housing authority policy documents for US cities with a population of 100 000 or more (n = 152). Factor analysis identified policy provisions to create a restrictiveness score (range = 0-8). We explored associations between restrictiveness scores and city-level measures of racial/ethnic diversity, racial/ethnic neighborhood segregation, ideology, and public housing scarcity.

Results. Eight policy provisions, 6 relating to consideration of mitigating circumstances, explained 71.0% of the variance in housing authority policy provisions related to criminal justice histories. We observed small but significant positive associations between restrictiveness scores and racial/ethnic diversity (r =0.22) and neighborhood segregation (r =0.18). There was no correlation between restrictiveness scores of housing authorities within the same state (intraclass correlation = 0.0002).

Conclusions. Housing authority policies vary substantially regarding the circumstances under which people with criminal justice histories can obtain and retain public housing. Exposure to constellations of policy provisions that might institutionalize health inequities and increase health risk among people with criminal justice histories can be quantified through a systematic process. (Am J Public Health. 2020;110:S137-S144. doi: 10.2105/AJPH.2019.305437)

Incarceration rates in the United States are higher than in any other country in the world and have a disproportionate impact on Black Americans.1 In 2016, Blacks were 5.9 times more likely than were Whites to be incarcerated.2 Considerable research documents associations between incarceration and poor health,3-5 and, not surprisingly given the disproportionately high rates of incarceration among Blacks, a growing literature attributes at least some of the magnitude of racial health disparities to mass incarceration.6-9 While the impacts of incarceration on health are wellestablished, less clear are the mechanisms through which these impacts occur. Some of these impacts likely result from the ways that having a criminal justice history shapes access to critical social determinants of health.10 Individuals face numerous barriers to reintegration after incarceration, and housing poses a particular challenge.11 14 Upon leaving prison, they simultaneously face financial challenges-45% of re-entrants do not earn any income in the first year after incarceration15-and a severe affordable housing crisis. Across the United States, fair market rents have increased faster than wages such that there is currently no state where full-time minimum-wage work is sufficient to rent an unsubsidized fair-market 2-bedroom unit.16 Government rental assistance programs are one of the few sources of affordable housing available to low-income renters,16,17 particularly for Blacks-who are the head of household (i.e., leaseholder) of approximately 44% of the public housing units in the United States.18 Recent research suggests positive effects of rental assistance on psychological well-being, overall self-rated health, and access to health care.19 21 However, public policies impose restrictions on the ability ofpeople with criminaljustice histories to access rental housing assistance and achieve housing security.22-26

Given the well-established effect of housing on mental, physical, and behavioral health outcomes27 and emerging

evidence regarding the health benefits of rental assistance programs, specifically,19,20 policies that affect access to rental assistance are likely to have significant health implications forpeople with criminal justice histories. Furthermore, given that Blacks are disproportionately likely to have been incarcerated,2 housing policies that affect access to rental assistance based on criminal involvement are likely to exacerbate health disparities.9 The measurement of these policies and their implications for health equity are the focus of this study.

LOCAL HOUSING POLICIES AS STRUCTURAL MEDIATORS

Public housing units-subsidized residences managed by local public housing authorities with federal funding from the Department of Housing and Urban Development (HUD)-are home to approximately 1.2 million low-income households in the United States. While federal statute (24 CFR 982.553) specifies some circumstances in which people with criminal justice histories are restricted from public housing (e.g., 3-year ban following eviction from public housing for drug-related criminal activity), local housing authorities have tremendous discretion when setting policy to determine who gets admitted to public housing and the circumstances under which they can be evicted. These local housing authority policies are codified as provisions in housing authorities' Admissions and Continued Occupancy Policies (ACOPs), which are typically hundreds of pages in length. Previous analyses ofACOPs have shown that most local housing authorities impose restrictions on people with criminal justice histories that are more restrictive than the federal minimum.22-25 For example, this was demonstrated by Curtis etal. in a 2013 analysis of the ACOPs of 40 state and local housing authorities22 and by a 2015 Shriver Center report that analyzed more than 300 public housing policy documents, including ACOPs.24

Recent HUD memos have encouraged local housing authorities to be cautious when setting policy related to how criminal justice histories are used, given the disparate impact ofthese policies on Blacks and, therefore, the potential for these policies to violate the Fair Housing Act.25 A 2015 HUD memo promulgated a rule that arrest is not sufficient evidence to prove that someone engaged in criminal activity and, thus, should not be used to trigger application denial or eviction from public housing (Appendix A, available as a supplement to the online version of this article at http://www.ajph.org). However, there are no mechanisms for HUD to monitor or enforce the rule.28

Although no studies have assessed associations between ACOP policy provisions and health outcomes, Figure 1 offers an empirically informed diagram of the pathways through which these local housing policies could contribute to health disparities. ACOP provisions related to criminal justice involvement are conceptualized as a structural mediator of the relationship between criminal justice policies that have a disparate impact on Blacks (e.g., stop and frisk, structural determinant) and housing insecurity (proximal outcome) and poor health outcomes (distal outcome). Housing insecurity can lead to poor health in many ways, such as by increasing exposure to physically, socially, and sexually unsafe living situations; fragmenting social capital and support; producing chronic stress; and limiting time and space needed to manage chronic diseases.19-21,27 Empirically documenting the impacts of ACOPs on health-in addition to other "invisible punishments" embedded in policies that extend the reach of the criminal justice system and have a disparate impact on Blacks29-requires precise measurement of the policy exposure. Standard methods of policy exposure measurement are unlikely to adequately achieve this.

In policy impact studies, the independent variable is typically a single policy measured as a dichotomous variable.30,31 Although this approach is appropriate for measuring exposure to macro policies that have strong and independent influences on health, it is less well-suited for measuring exposure to constellations of micro policy provisions that, in aggregate, might increase health risk. As Tremper et al. suggest, such policy provisions might be better "measured at the ordinal or interval level, thereby enabling dose-response analyses, possibly enhancing statistical power to detect the law's effects."30(p253) However, few policy impact studies in general, and no studies of public housing authority policies in particular, have measured policy exposure as a continuous variable.

STUDY PURPOSE

The primary objective ofthis study was to quantify variation in the restrictiveness of local public housing authority policies related to the admission and eviction ofpeople with criminal justice histories. More broadly, the study sought to develop a methodological approach that can be used to quantify exposure to clusters of policy provisions that are likely to increase the health risk ofpeople with criminal justice histories and, in turn, produce health inequities and

perpetuate health disparities.

METHODS

We conducted a quantitative content analysis ofACOPs. We used factor analysis to identify a small number of ACOP policy provisions that captured restrictiveness toward people with criminal justice histories and developed a scoring procedure to quantify restrictiveness.

Sample Frame and Identification of Policy Documents

We used US Census data to identify all cities with 2015 population of 100 000 or more persons. These 302 cities were under the jurisdiction of265 housing authorities, 57 ofwhich did not manage any public housing units. This resulted in a sample frame of208 housing authorities. We conducted Internet searches to identify ACOPs on these housing authority Web sites. When ACOPs could not be identified, housing authorities were e-mailed 4 times and called 3 times. We identified ACOPs for 152 (73%) housing authorities, which were in 40 states (range of ACOPs per state = 1-17). ACOP year ranged ffom 2009 (2 ACOPs) to 2018 (16 ACOPs) and more than half (78 ACOPs) were from 2016 or 2017.

Codebook and Coding

We carried out codebook development and coding in accordance with recommendations for conducting content analysis of policy documents.30-32 Informed by research and scholarship about public housing authority admission and eviction policies,22-26 we created preliminary coding categories and definitions. Five members ofthe project team then independently read 5 identical ACOPs from a geographically diverse sample of housing authorities, the categories were revised through discussion, and a coding instrument was created in Qualtrics. This process was then repeated 2 more times and a complete draft of the codebook was created.

Three coders then viewed a 1-hour, Web-based presentation about the project, reviewed the codebook, and participated in a 3-hour in-person training and facilitated discussion. Following this, the 3 coders independently coded identical ACOPs until sufficient interrater agreement statistics were achieved (mean agreement = 81%). Finally, the 3 coders jointly coded 15 ACOPs to ensure consistency in coding decisions and then independently coded the remaining ACOPs.

Analysis

We downloaded the coded data set from Qualtrics and imported it into R (R Foundation, Vienna, Austria) for analysis. We transformed nominal data into dichotomous, ordinal, and continuous variables to characterize policy provisions. We produced univariate statistics to describe the prevalence of policy provisions. We first investigated the underlying factor structure of 16 policy provisions (Table 1) through exploratory factor analysis. We then verified the factor structure through confirmatory factor analysis (details in Appendix B, available as a supplement to the online version ofthis article at http://www.ajph.org).

Restrictiveness scale development. For each policy provision, we assigned a numeric value to each coding option in which the least restrictive option was coded as 0 and the most restrictive option was coded as 1. For example, ifan ACOP stated that arrests or charges were given less weight in admissions decisions than convictions, the policy provision was scored as 0. If the ACOP did not state that arrests or charges were given less weight, the provision was scored as 1. We calculated intraclass correlation (ICC) coefficient to examine whether there was a significant association between restrictiveness scores for local housing authorities in the same state.

Associations between restrictive scores and city-level factors. We produced Spearman correlation coefficients to explore associations between each city's restrictiveness score and city-level measures. We assessed measures of city racial/ethnic diversity and racial/ethnic neighborhood segregation because they are indicators of sociodemographic context and integration. We obtained these measures from City Health Dashboard,33 which generated estimates with American Community Survey data. Diversity was operationalized as an index in which 0 represents a city's population comprising only 1 racial/ethnic group (minimal diversity) and 100 represents a city's population comprising an equal proportion of all racial/ethnic groups (maximum diversity). Racial/ethnic neighborhood segregation is as an index in which 0 represents every census tract in a city being perfectly representative of the city's overall racial/ethnic composition (absolute integration) and 100 represents every census

tract comprising only 1 racial/ ethnic group (absolute segregation). We assessed city ideology because it is an indicator ofthe sociopolitical climate in which housing policies are developed and implemented. We obtained ideology data from the American Ideology Project.34 We assessed waitlist time for public housing (in months) and the percentage of public housing units occupied in each city by using HUD data18 because they are indicators of public housing scarcity, and ACOP restrictions could serve as a strategy to ration a finite resource.

RESULTS

Table 1 shows the prevalence of 16 policy provisions that relate to restrictions toward people with criminal justice histories obtaining and retaining public housing. In the admission domain, 3 policy provisions related to "lookback periods"-the amount of time that needs to elapse after a person is involved in criminal justice activity to be re-eligible for public housing. Longer lookback periods are more restrictive because more time needs to pass before a person is eligible. While 46.7% of housing authorities imposed a lookback period of 3 years or less for drug-related criminal activity, which is similar to the federal lookback period for drug-related eviction from public housing, 43.4% imposed 4- or 5-year lookback periods, and 9.9% looked back 6 years or more.

Almost half (48.7%) of the housing authorities did not explicitly state that arrests or charges were given less weight than convictions when defining what was considered proofofcriminal activity. The inclusion ofan explicit statement is an indicator of an ACOP being less restrictive toward people with criminal justice histories because it demonstrates commitment to implementation ofthe 2015 HUD rule that bans the practice. There was no significant difference (P = .99) in the prevalence of this policy provision in ACOPs published before and after promulgation of the rule.

Housing authorities also varied regarding consideration of mitigating circumstances when making admissions decisions for applicants with criminal justice histories. About half (50.7%) of ACOPs stated that mitigating circumstances related to the nature ofcriminal activity (e.g., seriousness) would be considered. A slightly smaller proportion (40.8%) stated that factors related to the impact ofthe admission decision on the applicant's family would be considered as a mitigating circumstance. Explicit mention of these mitigating circumstances contributes to policies being less restrictive because they codify that housing authority officials have the ability to admit individuals who would otherwise be denied admission.24,25

In the eviction domain, just half (50.0%) of ACOPs stated that a family was permitted to remove a person who engaged in criminal activity from the lease to avoid eviction. The absence ofthis policy provision is an indicator of restrictiveness because an entire family can be evicted because 1 family member engaged, or was suspected to have engaged, in criminal activity. More than one third (36.8%) of ACOPs explicitly stated that arrest was grounds for eviction, which is a direct violation of the 2015 HUD rule, and there was no significant difference (P = .99) in the prevalence of this policy provision in ACOPs published before and after promulgation of the rule. Only 52.6% of ACOPs stated that mitigating circumstances would be considered when making eviction decisions, compared with 86.2% for admissions decisions.

Factor analysis resulted in a single factor, comprising 8 policy provisions (Table 2), which explained 71.0% of the total variance (a = 0.88). The mean restrictiveness score was 4.07 (SD = 2.78). Table 3 shows the distribution of city ACOP restrictiveness scores by quartile rank. The most frequent restrictiveness scores were zero (32 ACOPs), 6 (29 ACOPs), and 7 (26 ACOPs). The ICC for restrictiveness scores for housing authorities in the same state was not significant (ICC = 0.0002; P> .99).

There were small but significant positive correlations between restrictiveness scores and city racial/ethnic diversity (r =0.22; P = .007) as well as racial/ethnic neighborhood segregation (r = 0.18; P = .02), wherein greater restrictiveness scores were associated with more diversity and more segregation. Restrictiveness scores were not significantly associated with city ideology (r = -0.07; P = .37) nor waitlist time for public housing (r = 0.007; P = .93) or the percentage of public housing units occupied (r = -0.0008; P =.99).

DISCUSSION

Consistent with previous research,22 25 we found that most housing authority policies are more restrictive toward people with criminal justice histories-in terms of lookback periods of crimes that can trigger admission denial or eviction-than required by federal law. Given that stable housing is a critical social determinant of health,10,27 and

given the disproportionate representation of Blacks in the criminal justice system,1,2 these policies could contribute to health inequities.6 8

The current study extends previous research by demonstrating how ACOP policy provisions cluster together and by identifying a small number of provisions that explain a substantial proportion of the variance in housing authority policy related to criminal justice involvement. The restrictiveness scoring methodology developed in this study can be used in future research to test associations between housing authority policy restrictiveness and health outcomes among people with criminal justice histories. More broadly, this approach could serve as a template for quantifying exposure to constellations of policy provisions in other areas (e.g., employment policy, financial lending policy) that influence access to health-promoting resources among people with criminal justice histories.

Although small in magnitude, ACOP restrictiveness scores were positively and significantly associated with the covariates of city-level racial/ethnic diversity and racial/ ethnic neighborhood segregation, and post hoc analysis revealed that these 2 covariates were slightly associated with each other ($r = 0.16$; $P = .06$). These findings raise questions about the dynamics through which the racial/ethnic climate of a city might influence policy design or vice versa. For example, it is plausible that a city policy environment conducive to the design of ACOPs that impose broad restrictions on people with criminal justice histories (who are disproportionately Black2) would also be conducive to policy decisions that foster racial/ethnic neighborhood segregation. It is also plausible that ACOP restrictions toward people with criminal justice histories influence patterns of racial/ethnic segregation within a city. While speculative, the study findings highlight areas for future research about how other city-level factors (e.g., crime rate, housing affordability) are associated with public housing policies.

Six of the 8 ACOP policy provisions retained after factor analysis related to explicit mention of mitigating circumstances under which people with criminal justice histories could potentially obtain and retain housing. Although housing authority officials can still take mitigating circumstances into consideration if the ACOP does not explicitly state their ability to do so, the inclusion of these provisions might be indicators of a broader housing authority culture that believes that criminal justice histories should not translate into persistent social disadvantage. While such a culture could improve access to public housing among people with criminal justice histories and the health benefits that stable housing confers, there are potential consequences of codifying discretion in this way. An ACOP policy architecture structured around discretion likely results in inconsistent admission and eviction decisions as housing authority officials make decisions on a case-by-case basis. This unpredictability could have implications for people with criminal justice histories and their health. Qualitative research suggests that the discretion held by housing authority officials can prompt some people with criminal justice histories to engage in a labor-intensive process to make a case for why they are worthy of tenancy.26 These processes can be stressful, have taxing effects on health and relationships, and also internalize the stigma of criminal justice system involvement.35 For others with criminal justice histories, inconsistent housing authority admissions decisions can result in beliefs that policies are more restrictive than they actually are and deter housing applications among those who are eligible and in need.26 The codification of discretion might also allow the individual biases of housing authority officials (e.g., racial prejudices) to have substantial influence on who obtains and retains housing.

That discretion is central to ACOP policies related to criminal justice system involvement is further implied by the finding that there was no correlation between restrictiveness scores of housing authorities in the same state. This suggests that local housing authorities-and potentially the locally appointed Boards of Commissioners to which they report-exercise autonomy when setting policy and do not simply adopt the same policies as their counterparts in neighboring jurisdictions. Relatedly, that housing authority restrictiveness scores were not associated with measures of public housing scarcity suggests that ACOP restrictions toward people with criminal justice histories are not primarily being used to ration the distribution of a scarce resource.

The publication of the HUD rule prohibiting the use of arrest records in admission or eviction decisions was not associated with the presence ofpolicy provisions related to the use of arrest records. This raises questions about the extent to which housing authorities are aware of, and take seriously, the rule. Because housing authorities are not required to restate federal rules in their ACOPs, the absence ofan explicit statement that arrests are not considered

in admission or eviction decisions should not be interpreted as meaning that a housing authority definitively considers arrests (although more than one third of ACOPs did explicitly state that arrest was grounds for eviction, a direct violation ofthe rule). While limited inferences can be drawn for this reason, the inclusion of a statement that arrests are not considered can be conceptualized as an indicator ofan ACOP being inclusive toward people with criminal justice histories because it signals that a housing authority is committed to ensuring that the HUD rule is implemented in practice. As recommended in a 2018 Government Accountability Office report, HUD should update its Public Housing Occupancy Guidebook (last updated in 2003) to provide clear guidance for housing authorities to update their ACOPs on this and other rule changes.

Limitations

The study had limitations. First, it focused on policies "on the books," which are not necessarily the same as how policies are implemented in practice.31 Housing authority officials presumably vary in how they interpret ACOPs and exercise discretion when making admissions and eviction decisions.26 Validation of the restrictiveness scale would enable it to serve as a better indicator of policy in practice. However, it would be very challenging to validate the scale because doing so would require detailed information about the frequency of, and reasons for, public housing admission denials and evictions across cities. These data are not available.14 Thus, the scale should be interpreted as more of an indicator of policy climate than measure of policy in practice.

Second, despite a rigorous search protocol, ACOPs were identified for 73% of the housing authorities in the sample frame. It is possible that housing authorities that did not post their ACOPs online or respond to requests are systematically different than housing authorities for which ACOPs were obtained. Third, analyses gave equal weight to all policy provisions and did not account for differences in the magnitude of impact that different policy provisions might have.

Conclusions

Housing authority policies vary substantially regarding the circumstances under which people with criminal justice histories can obtain and retain public housing. Exposure to constellations of micro policy provisions related to criminal justice histories can be quantified through a systematic process. Such quantification can make it possible to examine the extent to which, and mechanisms through which, policies affect health outcomes and health inequities.

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CONTRIBUTORS

J. Purtle oversaw data collection, conceptualized the analysis plan, and led the writing of the article. L. T. Gebrekristos led the quantitative analysis. K. M. Blankenship conceptualizedthe study and securedfunding. All authors contributed to the development of the coding instrument, interpretation ofresults, and the writing, review, and revision of the article.

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CONFLICTS OF INTEREST

None of the authors have any conflicts of interest to disclose.

HUMAN PARTICIPANT PROTECTION

This study did not involve human participants, and thus did not require institutional board review.

Sidebar

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DETAILS

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The Effect of Health Insurance on Health Care Utilization in the Justice-Involved Population: United States, 2014–2016

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ABSTRACT (ENGLISH)

Objectives. To examine the impact of health insurance coverage on utilization of outpatient, hospital, and emergency department care among justice-involved individuals in the United States. Methods. We performed repeated cross-sectional analyses with data from the National Survey of Drug Use and Health. The study population included 6086 adults with justice involvementwithin the pastyear.We used logistic regression to examine the odds of health care utilization based on either a dichotomous or categorical measure of health insurance coverage. We used negative binomial regression to examine the number of times a specific type of care was utilized with both a dichotomous measure of health insurance coverage and a categorical measure of type of health insurance. Results. Health insurance was associated with increased utilization of outpatient, inpatient, and emergency department care. Conclusions. Health insurance coverage was associated with increased utilization of outpatient, inpatient, and emergency department health care among justice-involved individuals. Therefore, expanding access to health insurance in this population has the potential to increase care utilization of all types and decrease barriers to medical services. (Am J Public Health. 2020;110:S78-S84. doi:10.2105/AJPH.2019.305399)

FULL TEXT

Headnote

Objectives. To examine the impact of health insurance coverage on utilization of outpatient, hospital, and emergency department care among justice-involved individuals in the United States. Methods. We performed repeated cross-sectional analyses with data from the National Survey of Drug Use and Health. The study population included 6086 adults with justice involvementwithin the pastyear.We used logistic regression to examine the odds of health care utilization based on either a dichotomous or categorical measure of health insurance coverage. We used negative binomial regression to examine the number of times a specific type of care was utilized with both a dichotomous measure of health insurance coverage and a categorical measure of type of health insurance. Results. Health insurance was associated with increased utilization of outpatient, inpatient, and emergency department care. Conclusions. Health insurance coverage was associated with increased utilization of outpatient, inpatient, and emergency department health care among justice-involved individuals. Therefore, expanding access to health insurance in this population has the potential to increase care utilization of all types and decrease barriers to medical services. (Am J Public Health. 2020;110:S78-S84. doi:10.2105/AJPH.2019.305399)

In 2016, 1 in 38 adults in the United States was under correctional supervision.1 Of those, roughly 2.2 million adults were incarcerated, with 1.5 million in prison and more than 740 000 in jails.1,2 Although these numbers represent a small decline from recent years, the US prison population remains the highest in the world.3 Returning citizens represent a medically vulnerable population, as they suffer from increased rates of many chronic medical conditions including hypertension, diabetes, asthma, cancer, and mental health conditions, as well as infectious diseases such as HIV and hepatitis.4 6 Release from prison itself carries an increased risk of hospitalization and death upon release.7-9

Returning citizens also face multiple challenges upon re-entry to the community including poverty, homelessness, and employment issues.10 Typically, access to medical care among this population has posed challenges, as many returning citizens lack health insurance.11 14 While the Affordable Care Act (ACA) has increased insurance rates, the overall rate of uninsurance among returning citizens remains double that of the general public.11 This obstacle in access leads to increased rates of emergency department (ED) and inpatient hospital utilization for medical care upon release, often for preventable conditions that can be managed in 15,16 an outpatient setting.

Previous studies have sought to examine the impact of increased insurance coverage following the implementation of the ACA on utilization of mental health and substance use treatment of justice-involved young men,11 as well as utilization of the ED in the justice-involved population.12 Although other studies have demonstrated that health insurance is associated with increased care use for low-income populations,17 to our knowledge, no study has yet examined whether health insurance coverage affects the total amount of medical care that justice-involved

individuals receive, or the impact of insurance on the source of care utilized. It is critical to examine the utilization of inpatient, emergency, and outpatient care in this population, as these patients are medically complex and hold an increased risk of hospitalization and death upon release.7,8

Current literature suggests that decreased rates of insurance among justice-involved individuals create barriers to accessing primary care, which in turn causes increased utilization of acute medical care.11,12 What is yet to be addressed is how insurance coverage for justice-involved individuals affects utilization across inpatient, outpatient, and ED settings. To address this gap in knowledge, we analyzed multiple years (2014, 2015, and 2016 surveys) of National Survey of Drug Use and Health (NSDUH) data to examine how health insurance coverage for justice-involved individuals affects utilization of outpatient, hospital, and ED services and whether the impact of health insurance on medical care utilization varies by type of insurance coverage (i.e., public, private, public and private, other) among justice-involved individuals.

METHODS

We took the data from the cross-sectional NSDUH in 3 recent waves (2014, 2015, 2016) after the ACA was fully implemented. This survey is the primary source of nationally representative annual estimates of drug use and mental illness among the noninstitutionalized US population aged 12 years and older.11,18 Following previous studies,11 we defined justice involvement broadly to include individuals arrested, on probation, or on parole during the past year. To ensure that was appropriate, we conducted exploratory descriptive analyses (not shown) that demonstrated that each of these justice-involved groups has similar health insurance rates to one another and health insurance rates that are much lower than for the adult population as a whole.19 Therefore, we restricted our sample to the 6086 adults (aged 18 years and older) who fit these criteria. In robustness checks (which we discuss in the Sensitivity Analyses section), we ran analyses separately by type of criminal justice involvement to ensure that our results were not driven by our decision to collapse justice involvement into 1 category.

For each analysis, we further restricted our sample to individuals who were not missing data on the outcome ofinterest and employed multiple imputation to fill in missing data for covariates.20 Our final analytic sample varies slightly by outcome, ranging from 5924 to 6058 individuals.

Outcome Measures

In this study, we had 6 outcome measures capturing 3 different types of care utilization. To capture outpatient care usage, we included a measure indicating whether an individual visited a doctor, nurse, physician assistant, or nurse practitioner during the past 12 months and a count measure indicating the number of times an individual received this type of care. To capture ED usage, we included a measure indicating whether an individual had been treated in an ED during the past 12 months and a count measure capturing the number of times an individual received this type of care. To capture overnight stays in the hospital, we included a measure indicating whether an individual stayed overnight or longer as an inpatient in a hospital during the past year and a count measure capturing the number ofnights an individual received this type of care.

Key Independent Variables

We used 2 different self-report measures to capture health insurance status. First, we included a binary measure that indicated whether an individual had any type ofhealth insurance coverage. Second, we created a categorical variable indicating what type of health insurance an individual had: no health insurance coverage, public health insurance coverage only, private health insurance coverage only, both public and private health insurance coverage, or other health insurance coverage. The type of health insurance that individuals in the "other" category had is not available in the NSDUH data, but consists ofrespondents who did not report having coverage through Medicare, Medicaid or Children's Health Insurance Program, private health insurance, Champus, Tricare, Veterans Administration health care, or military.18 It is important to be cautious when interpreting coefficients associated with "other" health insurance because it is unclear what type of insurance is being captured.

Control Variables

On the basis of previous literature and theoretical expectations, we controlled for a number offactors that may be associated with both health insurance coverage and health care usage. To capture severity of criminal justice

involvement, we created a 3-category variable indicating whether individuals were arrested, on probation, or on parole during the past 12 months. To capture substance use over the past year, we controlled for alcohol dependence or use, nicotine dependence or use, illicit drug dependence or use, and marijuana dependence or use. To capture respondent mental and physical health, we controlled for serious psychological distress during the past year and self-reported health (coded excellent, very good, good, or fair or poor).

We also controlled for demographic characteristics, which included age (coded 18-25, 26-34, 35-49, and 50 years or older), gender, race/ethnicity (coded White, Black, Latino/a, or other), educational attainment (coded less than high school, high school completed, some college, and college completed or more), and marital status (coded married, single, or divorced, separated, or widowed). We captured economic circumstances by controlling for the incometo-needs ratio (coded below the poverty threshold, up to 2 times the poverty threshold, or more than 2 times the poverty threshold [according to the US Census Bureau in the year the person was surveyed]) and employment status (coded full-time, part-time, unemployed, or other). We also controlled for the number of times respondents moved over the past year (coded0, 1,2, or3 ormore times). Lastly, following previous research, we included a scale capturing respondent's propensity for taking risks, coded from 0 to 2, with 0 representing the lowest levels of risk-taking propensity and 2 representing the highest.21,22

Analytic Strategy

For each outcome measure, we used repeated cross-sectional data and conducted 4 sets of analyses, each including the full set of control variables described previously, as well as year fixed effects. In the first 2 sets of analyses, we used logistic regression to examine the odds of having used a particular type of care. The only difference between the first 2 sets of analyses is that the first explored the association between our dichotomous measure of health insurance coverage and care usage, while our second examined the association for our categorical measure capturing different types of health insurance coverage. In our third and fourth sets of analyses, we used negative binomial regression to examine the number of times an individual used a specific type ofcare. The only difference between the third and fourth sets of analyses is that the third explored the association between our dichotomous measure of health insurance coverage and care usage, while the fourth examined the association for our categorical measure capturing different types of health insurance coverage. For each analysis, we used a statistical significance threshold of P less than .05, but also indicated whether a coefficient was significant at P less than .01. We also tested whether there were statistical differences in the coefficients of different types of health insurance by changing the reference group (e.g., making public-only the reference group, private-only the reference group).

RESULTS

In Table 1, we provide descriptive statistics for the sample and separately for individuals with and without health insurance. The descriptive statistics suggest that people with health insurance were significantly more likely to use care and used care more frequently, regardless of the type of care. Nearly 75% of those who had health insurance used outpatient care compared with approximately halfofthose without health insurance. Moreover, the median number of times a respondent used outpatient care during the year among people with health insurance was 2, while for those without insurance it was 1.

In terms of ED usage, 46% of those with health insurance used care compared with 38% without insurance. Although the median amount of times a respondent used the ED was 0 regardless of health insurance status, the mean for those who had health insurance was 1.14 times during the year, while for those without insurance it was 0.91 times. Those with health insurance were also more likely to stay overnight at the hospital (15.04%) compared with those without insurance (8.49%). Although the median number of times a respondent stayed overnight at the hospital was 0 regardless ofhealth insurance status, the mean number of nights spent was higher among those with health insurance (0.81 for those with health insurance and 0.40 for those without insurance). In addition to care usage, there were significant differences by health insurance status across other characteristics, such as age, nicotine dependence or use, self-reported health, race/ethnicity, income level, number of residential moves, marital status, gender, employment status, and educational status. Therefore, multivariate analyses are needed to isolate

the association between health insurance status and use of care.

Multivariate Results

In Table 2, we explored whether health insurance status was associated with outpatient care usage among justice-involved individuals. In this table, we only present health insurance coefficients to preserve space, but the coefficients associated with the control variables can be found in Table A (available as a supplement to the online version of this article at http://www.ajph.org). In the first set of analyses, we examined whether health insurance coverage and type of health insurance were associated with having used outpatient care in the past year. The results suggest that individuals with health insurance had 2.39 times higher odds of having used outpatient care than individuals who lacked insurance (P< .01). The results from model 2 suggest that this association held for all types of insurance (P< .01), but was significantly larger for people who had both public and private insurance than for all other insurance types.

In our next set of analyses, we examined whether health insurance coverage and type of health insurance was associated with the number oftimes an individual used outpatient care in the past year. The results indicate that having health insurance was associated with a 67% increase in the number of times an individual used outpatient care (P< .01). The results also show that this association held for individuals who had public health insurance only (P< .01), private health insurance only (P< .01), and both public and private health insurance (P< .01), but not for individuals who indicated having other health insurance. Individuals with all types of health insurance used outpatient care significantly more than those with other insurance, while individuals with public and private insurance also used significantly more outpatient care than those who only had public or private insurance.

In Table B (available as a supplement to the online version of this article at http://www. ajph.org), we examined whether health insurance status was associated with ED usage among justice-involved individuals. In models 1 and 2, we explored whether health insurance coverage and type of health insurance was associated with having used the ED in the past year. Our results from model 1 show that individuals with health insurance had 42% higher odds of having used the ED than individuals without insurance (P <.01). Model 2 demonstrates that this association was strongest for people who had public health insurance (P <.01 for those with public health insurance only and P <.05 for those reporting both public and private health insurance coverage). We did not find significant associations for those who only had private health insurance and for those who indicated having other health insurance. In addition, we found that those with public health insurance only were significantly more likely to have used the ED than individuals with private insurance only.

In models 3 and 4, we explored whether health insurance coverage and type of health insurance was associated with the number of times an individual used the ED in the past year. The results from model 3 indicate that having health insurance was associated with a 17% increase in the number of times an individual used the ED (P< .05). The findings from model 4 suggest that this association only holds for individuals who had public health insurance only (P <.05) and that individuals who had public health insurance only used the ED significantly more times than individuals with private insurance only.

In Table C (available as a supplement to the online version of this article at http://www. ajph.org), we examined whether health insurance status was associated with hospital overnight stays among justice-involved individuals. In models 1 and 2, we explored whether health insurance coverage and type of health insurance was associated with having spent the night in the hospital during the past year. The findings from model 1 suggest that the individuals with health insurance had 63% higher odds of having spent a night in the hospital than individuals without insurance (P< .01). The results from model 2 suggest that these associations only held for individuals with public health insurance (P <.01 for those with public health insurance only and P <.05 for those reporting both public and private health insurance). Moreover, the results suggest that individuals who had public insurance only and public and private insurance were significantly more likely to use the ED than individuals who had private insurance only.

In models 3 and 4, we explored whether health insurance coverage and type of health insurance was associated with the number of times an individual stayed in the hospital overnight in the past year. The results from model 3 indicate that having health insurance was associated with a 74% increase in the number of times an individual

stayed overnight in the hospital (P< .01). The results from model 4 show that this association held for individuals who had public health insurance coverage only (P <.01) and public and private health insurance (P< .05). Moreover, individuals who had public health insurance only spent significantly more days overnight Sensitivity Analyses
For the results we report in this article, we collapsed individuals who experienced criminal justice involvement in the past year into 1 group. In supplemental analyses, we examined whether the effects of health insurance on health care service usage differed across types of criminal justice involvement. To do so, we ran separate multivariate logistic regression and negative binomial regression analyses (not shown) for each type of criminal justice involvement and tested for equality of the health insurance coefficients.23 Using this approach, we found very little evidence of statistically significant differences in the impact of health insurance on health care service usage across types of criminal justice involvement. Specifically, out of 198 DISCUSSION
In this study, we examined whether health insurance coverage was associated with an increased use of medical care among justiceinvolved individuals by using nationally representative data from the NSDUH survey waves (2014, 2015, and 2016) administered after implementation of the ACA. Our results from multivariate analyses suggest that justiceinvolved individuals were more likely to use all types of care, including outpatient care, the ED, and overnight hospitalization, when they had health insurance. The impact of health insurance on outpatient care was similar for both public and private insurance, while for ED use and overnight hospitalization the impact tended to be particularly large for individuals with public insurance.
On a broad level, the findings from this study are consistent with previous scholarship suggesting that strengthening social welfare programs can mitigate the negative implications of mass incarceration.24 More narrowly, our results align with research suggesting that health insurance coverage is associated with an increase in substance use treatment and mental health treatment usage among justice-involved individuals who self-report these behavioral health issues.11 Previous studies have demonstrated that justice involvement is associated with higher rates of inpatient and ED utilization, and that formerly incarcerated individuals are less likely to report primary care utilization and more likely to report ED use.15,16 However, to our knowledge, no study to date has examined utilization rates of acute versus outpatient primary care, and our study is the first to examine how health insurance coverage affects total care usage among justice-involved individuals, as well as the first to explore how health insurance coverage affects frequency of care usage by source of care.
This study may have important implications for policymakers. Previous research has found that justice-involved individuals are far less likely to have health insurance coverage than are individuals who are not justiceinvolved.11 14 Our results suggest that expanding health insurance access for this population has the potential to increase care utilization. This is critical because research has consistently shown that justice-involved populations are medically vulnerable, with particularly high risks of HIV, hepatitis, hypertension, diabetes, asthma, cancer, mental health challenges, and substance use issues.4-9 While our study does demonstrate that insurance is associated with increased utilization of all levels of care, it is important to note that this increase also includes primary care. Previous studies have focused on how justice-involved individuals are more likely to utilize acute levels of care; however, our results suggest that health insurance coverage can lead to an increase in the use ofoutpatient care among this population.11,12 Presumably, increasing utilization of outpatient care may allow for chronic and preventive issues. Because justice-involved individuals are disproportionately of low socioeconomic status and people of color, expanding access to health insurance has the potential to reduce health disparities.25
In addition to discussing the significance of our findings, it is important to acknowledge this study's limitations. Perhaps most important, our study is based on nonexperimental data. Thus, despite the fact that we accounted for a wide range of potentially confounding factors, we cannot be certain that health insurance coverage has a causal impact on care usage among justice-involved individuals and that our findings were not driven by omitted variables. The crosssectional nature of the survey also makes it impossible for us to determine the exact timing of health insurance coverage enrollment and care usage, so it is possible that some respondents were enrolling in health insurance in response to health service usage. We also did not have data indicating the state of residence of each respondent and therefore could not account for state-level differences in ACA implementation and criminal justice

policies. Lastly, we found some evidence suggesting that public insurance is associated with higher rates of service use than private insurance, but our data did not allow us to determine why. Future research should examine this issue further.

Although the implications ofour findings for health outcomes are promising, the results are nuanced as to how expanding access to health insurance might influence the health care system. Multiple studies have demonstrated that justice-involved populations have an increased rate of inpatient and ED utilization.7,11,12,15,16 These are expensive sources of care, and our results suggest that expanding health insurance access might increase utilization of this type of care, and therefore increase health care costs. However, our results suggest that justice-involved individuals with health insurance are also more likely to use outpatient primary care, which is less expensive. Essentially, taken together, our results suggest that expanding health insurance access is likely to lead to increased utilization of care, regardless of type. From a cost standpoint, the key then is for policymakers to ensure that it is easier and more desirable for justice-involved populations to prioritize primary care over more expensive types of care.

It is also important to note that, although our data suggest that increasing health insurance will increase utilization, this does not necessarily improve health outcomes. Multiple socioeconomic factors contribute to health outcomes. Increasing health care access is a piece ofimproving population health, but not the only solution. Future work should examine how policies can be developed to expand insurance coverage while also investigating the multiple factors that contribute to health inequality. ÂfPU

Sidebar

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CONTRIBUTORS

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CONFLICTS OF INTEREST

We have no conflicts to disclose.

HUMAN PARTICIPANT PROTECTION

The University of Illinois Chicago Office for the Protection ofResearch Subjects Protocol 2018-1195 determined that the study did not meet the definition ofhuman participant research as defined by 45 CFR 46.102(f).

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DETAILS

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Barriers to Health Care for Latino Youths During Community Reentry After Incarceration: Los Angeles County, California, 2016–2018

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ABSTRACT (ENGLISH)

Objectives. To examine barriers to health care for Latino youths during reentry after incarceration. Methods. For this in-depth qualitative study, we conducted 69 semistructured interviewswith 22 Latinoyouths and theirparentsat 1,3,and 6monthsafterincarceration. We performed thematic analysis of interview transcripts, from which a preliminary conceptual model emerged describing barriers to care for Latino youths. We then conducted trajectory analyses of dyadic youth-caregiver pairs to test the conceptual model. We collected longitudinal interviews in Los Angeles County, California, from November 2016 to March 2018. Results. Beyond recognized stressors experienced by youths during reentry, most of which families related to poverty and neighborhood environment, Latino youths also experienced cultural barriers to care (i.e., self-reliance and pride, religiosity and reproductive care as taboo, preference for home remedies, language) as well as barriers to care because of undocumented status (i.e., fear of deportation, job insecurity). Conclusions. Reentry is challenging, and Latino youths face additional barriers to care during reentry related to culture and legal status, but have cultural strengths. Increased access to culturally sensitive, safety-net health care, regardless of immigration status, may reduce health inequalities for Latinoyouths undergoing reentry. (Am J Public Health. 2020;110:S63-S70. doi:10.2105/AJPH.2019.305374)

FULL TEXT

Headnote

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In 2017, US courts committed more than 26 000 juveniles to residential placement,1 a group disproportionately poor,2 of color,2 and with high morbidity.3 One in 5 were Latino (i.e., of Latin American origin or descent),1 which is likely an undercount.4 Most incarcerated youths (i.e., youths court-ordered to confinement) are released within 4 months,5 marking the beginning of the challenging 6-month transition period termed reentry. During reentry, youths must meet court requirements, which can include connecting with mental health care, while navigating settings that may feel chaotic or unsafe.6,7 Lacking sufficient support during reentry, such as access to mental health interventions shown to reduce recidivism, can contribute to rearrest.8,9 Access to health care, however, can transform trajectories.8,9

During reentry, many youths, regardless of race/ethnicity or gender, face common barriers to health care. The limited literature on youths' health care access during reentry identifies the following barriers to care: parents uninformed about correctional health diagnoses and aftercare plans10; youths' fear of health care, often because of fear of rearrest11,12; lack of insurance13; difficulty scheduling health visits11,14; lack oftransportation13; and uncomfortable provider interactions.11

Meanwhile, the broader health care access literature has identified barriers to care for youths of color relative to non-Hispanic White youths, including lack of health insurance, lack of usual source of preventive care, low quality of care, different health beliefs, and discrimination.15,16 Of these, lack of insurance and parental beliefs about illness emerge as especially pertinent to Latino youths relative to African American or non-Hispanic White youths.15,16 These barriers interact with known disparities in the justice system17-19 including "hypercriminalization," in which the justice and other systems of care take a more punitive approach towardboys of color.20 Incarcerated girls, meanwhile, face high mental and reproductive health risks,21 and Latinas in the justice system confront additional gender, race/ethnicity, and class prejudices that have a negative impact on health care access.22

Although Latino youths who are incarcerated have higher rates of substance use disorders and anxiety compared with other incarcerated youths and are at high risk for poor access to nonemergency health care in the community,13,23 to our knowledge, no previous study has focused on the experiences of Latino youths with health care access (or lack thereof) throughout reentry. We therefore sought to understand barriers to care for male and female Latino youths during reentry, from the perspectives of Latino youths and their parents, across a 6-month reentry period.

METHODS

This in-depth qualitative study applied a community-partnered participatory research24 approach with Los Angeles (LA) County, California, juvenile justice agencies. Community partners participated throughout the study, including identifying the research question, developing the study protocol and instruments, and providing input on analysis and dissemination.

Participants and Recruitment

Youths returning to a home setting after incarceration in an LA County juvenile detention facility during the study enrollment period (November 2016-March 2018), who were aged at least 12 years, fluent in English or Spanish, and without severe cognitive delay, were eligible for our larger mixed-methods study on reentry and health. The larger study included 50 closed-ended youth surveys, as well as 42 youth and 52 caregiver open-ended interviews, including 7 youth and 18 caregiver interviews from participants not identifying as Latino. The response rate for the overall study was 44%, which is consistent with previous studies of justice-involved youths.25 The current analysis focuses on male and female participants self-identifying as "Latino."

During the study enrollment period, youths exiting incarceration received a study flyer informing families about the

study and inviting them to contact the research team. In addition, each week, the county probation department provided the study team the contact information of youths released from confinement during the previous week. The study team then telephoned families and invited them to participate in the study. We conducted consent and assent discussions by telephone, emphasizing the confidential and voluntary nature of the study and its independence from the justice system. Participants received a $30 gift card for completion of each survey or interview.

Data Collection

At 1 month after incarceration, youth participants completed a confidential telephone survey on demographics and contextual health care information. We invited youth survey participants and their primary caregiver to participate in confidential, longitudinal, qualitative interviews about health care access during reentry. We initially invited all participants for interviews and then purposively oversampled girls and fathers to obtain a breadth of perspectives as we more frequently encountered boys and mothers during recruitment. Eight Latino survey participants declined the interview invitation. Ten parents requested to participate despite their child declining or being unavailable; we allowed these parents to participate.

Open-ended interviews took place at 1, 3, and 6 months after incarceration. Interviews explored views about youths' health and experiences accessing, or not accessing, a health visit (see Appendix A: Interview Guide, available as a supplement to the online version of this article at http://www.ajph. org). We conducted interviews in the language and at the timing and location of participants' preferences, either in-person or via telephone. We interviewed youths and parents separately. Interviews lasted 30 to 60 minutes and were audio recorded. We continued interviews until we reached and surpassed saturation of themes about barriers to care.26 Twenty-two Latino-identifying youths and 21 parents completed interviews, including 13 youth-caregiver pairs, 9 unpaired youths, and 8 unpaired caregivers (69 interviews total). Appendix B (available as a supplement to the online version of this article at http://www.ajph.org) shows interview participation for the entire sample by time point. Appendix D (available as a supplement to the online version of this article at http:// www.ajph.org) demonstrates reasons for attrition among Latino participants. Caregivers were 85% mothers, 10% fathers, and 5% grandmothers; for simplicity, we use the term "parent."

Table 1 shows sociodemographic characteristics ofLatino youth interviewees. Table 2 summarizes contextual information regarding health care access at 1 month after incarceration; participants described good general health, forgone care, and high exposure to childhood adversity. Appendix C details responses on childhood adversity.

Analysis

We performed inductive thematic analysis27 of the qualitative interviews. First, a transcription service transcribed the audio files and the team verified the transcripts. Second, using Atlas.ti version 5.0 (ATLAS.ti GmbH, Berlin, Germany), 2 team members opencoded youth and parent transcripts across the time points and developed a preliminary codebook on youths' health care access during reentry. Once we reached agreement on the codebook, 2 team members iteratively coded the transcripts, aware of dyadic relationships. We extrapolated codes into themes and examined for similarities and differences between youth-parent dyads. We then performed a second round of thematic analysis27 focusing on the subsample of Latino participants. We developed a preliminary codebook on barriers to care experienced by Latino youths during reentry, iteratively refined the codebook, reached consensus, and then applied it to the transcripts of Latino participants. We separately categorized aspects that, based on the literature, the families' statements, and our understanding of Latino identity (2 authors are Latina), seemed tied to families' racial/ethnic identity as Latino.

During the process of extrapolating codes into themes, a conceptual model depicting barriers to care experienced by Latino youths during reentry emerged. We tested the model by performing trajectory analysis28 of youth- caregiver dyads. We did so by iteratively reviewing transcripts by dyads across time points to assess the extent to which each family's experiences fit the model, adjusting the model accordingly so that the final model fit the data.28 For completeness, we also longitudinally examined transcripts from interviewees not in dyadic pairs for model fit. Interviews were ongoing during analysis, and member checking was performed. A native Spanish speaker conducted the Spanishlanguage interviews (31 total).

RESULTS

Three main themes emerged regarding barriers to care experienced by Latino youths during reentry: stressors of reentry, cultural barriers to care, and undocumented status.

Stressors of Reentry

Latino youths and parents, as did the larger study sample, described reentry stressors of youths reconnecting to school, finding employment, connecting to health care, and staying out of trouble. Families expressed logistical barriers to accessing health care, chiefly lack of transportation, lack of insurance, and difficulty obtaining timely, convenient appointments. Families felt stressed about meeting court requirements. They described that poverty caused them to live in violent neighborhoods with risky peer influences, which exacerbated youths' challenges during reentry. Despite probation officer support, families conveyed that poverty made accessing health care during reentry difficult as families had limited flexibility, could not afford copays, and relied on care settings that were difficult to navigate.

Cultural Barriers to Care

Self-reliance and pride. Latino youths and parents reported a strong self-reliance or pride that created a barrier to care. One youth stated, "Parents believe that until they see me dying, like not even able to walk, that's time for the doctor." Although many youths had diagnoses and care recommendations in place by the court, Latino youths and parents tended to associate receiving mental health care services with being "crazy," perceived accessing care as a weakness, and would only access care in extreme situations. In 1 scenario, the mother of a youth on antidepressants and diagnosed with substance use disorders expressed, "[He] says he is depressed, but I think he's fine. A depressed person is going to be sleeping, but he watches television and plays." A father stated about his son's mental health: "He's not crazy; he's fine." Families described having mental health conditions as shameful. One mother expressed,

> No, that was another culture thing, which I feel terrible about. I was in denial. I never wanted to take him to an actual psychologist or him being evaluated for ADHD [attention deficit hyperactivity disorder] because he's extremely intelligent. . . . Because for us it's a shame.

In essence, families' resilience, pride, and self-reliance, which some families directly connected to Latino culture, led to avoidance of mental health care, even when youths or professionals viewed treatment as necessary. Receiving medical advice from YouTube or "TV doctors," rather than in a health care setting, was also common.

Religiosity and reproductive care as taboo. For Latina youths, access to reproductive health care services was often limited by family beliefs regarding premarital sex and unwillingness to discuss sexual health. A female 16-year-old participant forwent testing for sexually transmitted infections during reentry after having unprotected sex because

> I don't want my parents to know. My mom doesn't like talking about it [sex]. To her, I shouldn't even have sex. . . . She believes in holy -you gotta be Holy Mary until you get married.

Another Latina participant described her mother feeling "angry" about a contraceptive implant she obtained while incarcerated. Once released, the youth was questioned judgmentally by her mother and subsequently had it removed. By contrast, boys and parents of boys did not reference reproductive care as taboo.

Preference for home remedies. Latino youths and parents described preferring home remedies to visiting a physician. A male 17-yearold participant explained, "We turn to remedios [home remedies] first and, if we don't get better, then we go [to the doctor]." One youth even shared her mother's home remedy: "If my stomach hurts, my mom will give me oil, lemon, and salt."

Language. Several monolingual Spanishspeaking parents reported not receiving discharge instructions, including health care recommendations, in Spanish upon their child's release from incarceration, which limited access to care during reentry. When asked about mental health care recommendations received from the justice system, a monolingual Spanish-speaking mother ofa 15-year-old boy responded, "Well, they only gave me information in English." Parents described language as a barrier when interacting with probation officers during reentry. Many parents sought translations from their children. Neither the youths nor US-born parents reported language as a barrier.

Undocumented Status as a Barrier to Care

Although we did not directly query immigration status, 5 families conveyed undocumented status as a substantial barrier to health care during reentry. Families tended to mention undocumented status when discussing insurance eligibility. Mothers ofundocumented youths reported applying for Emergency Medicaid for youths, but stated that it could not be used for programs required by the juvenile court. Youths did not discuss their own undocumented status; youths' undocumented status was disclosed by parents. Overall, being undocumented heightened families' sense ofjob insecurity and fear of deportation.

Job insecurity. Families generally prioritized employment security over accessing health care during reentry. For parents, the decision to not miss work rather than take their child to the doctor was difficult but deemed necessary. Many parents feared losing their job because of missed work. Most parents described living paycheck to paycheck, making every paying hour crucial to their finances. As 1 youth shared,

My grandma can't take her kid to the doctor because she has to be at work to make that small check. . . . Obviously, she can't miss a day because she's barely making ends meet.

Job insecurity was heightened for parents who were undocumented as their jobs were often not regulated and paid lower wages. Youths viewed finding a job as the most critical lever for promoting their health (i.e., above health care).

Fear of deportation. For parents who were undocumented, fear of deportation compounded the fear of losing employment because of missing work to facilitate youths' health visits. One mother explained: "When one doesn't have papers, one is scared." Because her employer knew she was undocumented, she feared being fired and deported if she missed work to take her son to a court-mandated mental health appointment during reentry. When youths were undocumented, fear of deportation interfered with parents' encouraging youths to access reentry services, as parents feared additional systems contact put youths at risk for deportation. One mother described having explosive conflicts with her daughter for longer than 1 month. Rather than getting needed help, the mother stated, "I kept her in the house because I was afraid they would deport her." Thus, youths being undocumented inhibited care access.

Conceptual Model of Barriers to Care During Reentry

The conceptual model in Figure 1 illustrates barriers to health care experienced by Latino youths and their families during reentry. Our framework derived from previous interviews with incarcerated youths guided the model; the framework depicts the "no exit" cycle between juvenile hall and the community.29 The new model demonstrates that youths exiting juvenile incarceration, as expressed by interviewees, experienced "stressors of reentry." The stressors of reentry had a negative impact on youths' mental health and contributed to reduced health care access, whereas probation officers and court-mandated care encouraged use. Thus, families conveyed that reentry in some ways increased and in other ways decreased health care access. We highlight barriers to care that families expressed as related to Latino culture or undocumented status in the center of the model; these barriers reduced health care access. We postulate that reduced health care access may contribute to worse health and reincarceration.

Health Care Linkages Across Reentry

Figure 2 displays results from the trajectory analysis for 1 dyad; Appendix C shows results from all 13 dyads. Families described that linkages to mental health care occurred between 1 and 3 months after incarceration, often facilitated by probation officers. Families most commonly linked to mental health care when "wraparound" providers met youths at home or school. At 6 months, few youths remained connected to mental health care. By contrast, connections to medical and reproductive care seemed less temporally related.

DISCUSSION

In addition to experiencing recognized stressors7,30 and barriers to health care10-13 during reentry, Latino youths experienced barriers to care linked to Latino culture and family immigration status. These barriers provide insight into mechanisms through which reentry perpetuates health inequities.31 Notably, families did not discuss racism as a barrier to access. Given endemic racism and discrimination in the US juvenile justice and health care

systems,20,32 reasons for this potential underacknowledgment should be explored. Instead, families described behaviors and attitudes consistent with values and norms of Latino culture while also focusing on practical and legal barriers related to job insecurity, undocumented status, and underlying poverty.

Cultural Barriers to Care

Several aspects of Latino culture, especially marianismo and machismo,33 relate to the identified barrier of self-reliance and pride. Marianismo and machismo emphasize that women should embrace suffering with dignity and men should be strong, respectively. Because strength is valued, admitting symptoms or uncertainty, or accessing care and treatment, may be seen as signs of weakness.33 Latino youths and parents promoted the notion that care should only be accessed in extreme circumstances, despite correctional health recommendations and court mandates. Self-reliance seemed to correlate with preference for home remedies and lack of understanding of health needs. While families may be justified in not accessing care, judicial and health professionals may need to be more culturally attuned to factors leading to these decisions. Simultaneously, cultural attributes such as familismo34- strong family bonds- can be leveraged to promote youths' health care access and success during reentry. For example, parent participants described involving siblings and other relatives in youths' care, such as for transportation or translating during health visits. Furthermore, love for family and wanting to provide younger siblings a positive example motivated youths to reform.

The taboo nature of accessing-or even discussing-sexual health care was a challenge for Latina youths. Latino culture places a high value on virginity, especially for girls, encouraging abstinence until marriage. Latino parents may presume that adolescents are not sexually active and do not need reproductive health care.35 These perspectives contradict the need for continued sexual health care access during reentry, especially when hormonal implants or intrauterine devices necessitating follow-up have been placed. One third of incarcerated girls have been pregnant,36 indicating a potential disconnect between parental perceptions and youths' reproductive health care needs. Most youths exiting juvenile incarceration are aged younger than 18 years and rely on parents for transportation and insurance. Findings suggest the importance of confidential reproductive health services in settings easily accessible to youths, such as school-based clinics. Cultural attentiveness when providing reproductive care to Latino youths might enhance youths' and parents' acceptance of services.37

Language emerged as another key cultural barrier to health care. Some families stated that they did not receive information regarding health care recommendations in Spanish, and language limited their ability to collaborate with probation officers in guiding youths to services. Providing linguistically appropriate health care services and materials could mitigate a solvable barrier.38,39 Youths whose families speak languages less common than Spanish may face even more barriers.

Undocumented Status

Undocumented status created a formidable barrier to care, largely related to fears of deportation or loss of employment. In California, our study state, all youths aged 18 years and younger have access to Medicaid regardless of immigration status.40 That undocumented status creates a perceived barrier, despite existing care coverage for youths, is especially concerning in the context of reentry, when care may be required by courts. The findings suggest potential misinformation about available resources and care opportunities. Although undocumented status is not unique to Latinos, the experiences of Latino families can lend insight into challenges faced by immigrant communities.

Pubiic Health Implications

Findings reinforce that inequities in health care during reentry are driven by social circumstances, specifically culture, immigration status, employment security, and poverty. In addition to bolstering the health safety net more generally, providing culturally targeted interventions, such as promotoras (i.e., lay health workers)41 and linguistically appropriate care, may help Latino families overcome cultural and logistical barriers to care during reentry. In addition, promoting employee rights, especially for undocumented individuals and those who work low-wage, poorly regulated jobs, can support families in meeting youths' health care needs during reentry. Families connected to care most often when logistical barriers were minimized, such as through in-home "wraparound"

therapy.42 Finally, youths attributed successful care access to internal motivation. Further attention to youth and family resiliency factors can guide a strengths-based approach that complements efforts to dismantle barriers perpetuating health inequity after incarceration.

Limitations

As with other studies with justice-involved youths in community settings, recruitment was difficult and likely introduced selection bias. Differential loss to follow-up may have occurred. However, our trajectory analysis28 indicated that barriers to health care remained stable over time, and we allowed parents to participate even if youths were unavailable, which offered insight into the health care access of hard-to-reach youths.25 Additional concerns include lack of trust in the interviewer, especially during telephone interviews, and lack of generalizability, given the predominance of older male adolescents all residing in a single urban county.

While the study described the experiences of Latino youths, we cannot state with certainty which barriers were experienced only by Latino youths versus, for example, all youths of color or other youths from immigrant families. To mitigate this limitation, we examined the Latino interviews against data collected for our larger reentry study, which included African American and Native American families. It is our impression that poverty and systemic racism underlay barriers for all participants and that some cultural barriers were likely shared among youths from racial/ethnic minority groups. For example, fear, mistrust, and stigma toward mental health care, known barriers to care for justice-involved youths and communities of color in general,11 may have contributed to Latino families' strong sense of self-reliance. However, other barriers, such as preference for home remedies, emerged as specific for Latinos, as did language barriers and undocumented status, which would likely be present among other low-income immigrant communities. Finally, families' immigration status likely affected results; 80% of participating families had a parent born in Latin America. Families in the United States for more than 1 generation may be more aware of systemic racism or may feel more comfortable discussing it.

Conclusions

During reentry, Latino youths face known stressors and additional barriers to health care linked to poverty, culture, legal status, and racial/ethnic discrimination that merit further attention. These barriers perpetuate health and justice system inequities. Ultimately, being attuned to the perspectives, vulnerabilities, and strengths of marginalized Latino youths and their families can advance efforts to meet youths' health care needs during reentry.

CONTRIBUTORS

E. S. Barnert led the study, including conceptualization, recruitment and data collection, analysis, and writing of the article. N. Lopez participated in recruitment and data collection activities, analysis, and writing the article. P. J. Chung oversaw all aspects of the study and provided strategic input throughout.

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CONFLICTS OF INTEREST

The authors have no conflicts of interests to disclose.

HUMAN PARTICIPANT PROTECTION

This project was approved by the UCLA Office of Human Research Protection Program and by the Los Angeles County Juvenile Court.

Sidebar

ABOUT THE AUTHORS

At the time of the study, all authors were with the University of California Los Angeles (UCLA) David Geffen School of Medicine and Mattel Children's Hospital at UCLA, Los Angeles, CA.

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DETAILS

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Exposure to the US Criminal Legal System and Well-Being: A 2018 Cross-Sectional Study

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ABSTRACT (ENGLISH)

Objectives. To assess the association between exposure to the US criminal legal system and well-being. Methods. We used data from the 2018 Family History of Incarceration Survey, a nationally representative cross-sectional study of family incarceration experience (n = 2815), which includes measures of participants' own criminal legal system exposure, including police stops, arrests, and incarceration. We measured well-being across 5 domains-physical, mental, social, spiritual, and overall life evaluation-and analyzed trends in well-being by criminal legal system exposure using logistic regression. Results. Exposure to police stops, arrests, and incarceration were each associated with lower well-being in every domain compared with those not exposed. Longer durations of incarceration and multiple incarcerations were associated with progressively lower well-being. Those who were stopped and frisked by the police had low well-being similar to that of those who had been incarcerated multiple times. Conclusions. Any exposure to police contact or incarceration is associated with lower well-being in every domain. More involved exposure is associated with even lower well-being. Public Health Implications. Jail diversion and broader criminal justice reform may improve population-level well-being by reducing police contact and incarceration. (Am J Public Health. 2020;110:S116-S122. doi:10.2105/AJPH.2019.305414)

FULL TEXT

Headnote

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The United States has a massive criminal legal system.1 7 Contact with this system ranges from police stops to incarceration injail and prison, all of which have expanded in recent decades.1-4 The US prison population has more than tripled since the 1970s, with a system that now incarcerates almost 2.3 million individuals-the largest incarcerated population in the world.5 An additional 4.5 million individuals are supervised in the community on parole and probation,6 with a large community police force that has grown steadily since the passage of the 1994 Violent Crime Control and Law Enforcement Act.2,4,7

Incarceration has been substantively linked to negative mental health outcomes during imprisonment, and having a history of incarceration has been linked to a worsening of chronic medical conditions, substance use disorders, mental health disorders, and even preventable deaths following release.5,8,9 However, even transient exposure to the criminal legal system may have negative implications for our nation's health and well-being.

There is a growing body of research that highlights how contact with the police or living in a highly policed neighborhood is associated with worse mental health and psychological distress. A survey of 1261 young men in New York City revealed that individuals who reported more police contact also reported more trauma and anxiety symptoms.10 Other studies have also shown similar associations between aggressive policing or use of force and poor mental health.11 13 Further studies have shown that having a criminal record, even in the absence of being incarcerated, is associated with poor health outcomes.14 For instance, those on probation have a higher age-standardized mortality than does the general population.15 One plausible reason is the collateral consequences of a criminal conviction, such as legal restrictions that limit or prohibit people with criminal records from accessing employment, housing, education, voting, and other opportunities.

Exposure to the criminal legal system likely affects broader well-being, which is a person's holistic condition encompassing physical health as well as emotional, social, and spiritual components. Well-being is a critically important indicator of individualand population-level social welfare, and recently developed measures of well-being based on self-reported life evaluation have been found not only to be informative as valid measures of well-being but also to be strongly associated with key indicators of population health, such as life expectancy.16

Although there is some evidence that exposure to the criminal legal system affects well-being, the relationship has not been as closely studied in national population-based studies, leaving important questions on the full range of possible law enforcement and criminal justice system interactions and their consequences for well-being.

We examined the association between one's exposure to the criminal legal system-including police stops, arrests, and incarceration-and his or her wellbeing. We hypothesized that exposure to police stops, arrests, and incarceration would be associated with lower levels of well-being, with those who have been incarcerated multiple times having the lowest levels of well-being. We also hypothesized that social support and financial well-being would moderate the trajectories of recovery of well-being after incarceration.

METHODS

We used data from the Family History of Incarceration Survey (FamHIS), a nationally representative cross-sectional study originally designed to measure the national prevalence of family incarceration.17 FamHIS investigators worked with the National Opinion Research Center (NORC) to recruit a baseline sample of 4041 adults. Participants completed a brief screening tool that assessed incarceration experience in the immediate family. From this baseline sample, NORC recruited 1806 respondents with immediate family incarceration experience and 1009 respondents without immediate family incarceration to participate in the full FamHIS questionnaire, which includes items on one's own incarceration, police contact, and well-being. This set of 2815 respondents constitutes the full sample used for this study and yielded a survey response rate of 69.7%.

The FamHIS data include a set ofsampling weights, WEIGHT2, that adjusts the fullsurvey sample of 2815 to be representative of the US household adult population. WEIGHT2 accounts for the recruitment sampling into the baseline sample of 4041, and the stratified subsampling into the final FamHIS sample on the basis of family incarceration experience. This benchmarks the full-survey sample of 2815-including the items on one's own criminal legal system involvement-to the US household adult population. Full details on sampling and weighting methods are

detailed in Appendix Section A (available as a supplement to the online version of this article at http://www.ajph.org).

Independent Variable

The main predictor of interest is respondents' exposure to the criminal legal system, with 3 types of exposure that capture a range in the intensity ofcontact: stops by the police, arrests, and incarcerations for at least 1 night. Respondents who reported being stopped by police were asked whether they were also searched or physically "frisked" as part of the police stop. Those who reported being incarcerated for at least 1 night were surveyed for additional details about their incarceration experience, including when they were last released from incarceration (< 1 year ago, 1-5 years ago, 6-10 years ago, or >10 years ago), how many times they had been incarcerated (once or more than once), and the duration of their only ormost recent incarceration spell (1 day, 2 days to 1 month, between 1 month and 1 year, 1-5 years, 6-10 years, or >10 years). We used a dichotomous summary measure of any criminal legal system exposure to tabulate respondents who reported having experienced any police stop, arrest, or incarceration.

Dependent Variables

The outcome ofinterest was self-reported life evaluation, a measure of overall wellbeing that originated in the 100 Million Healthier Lives (100MLives) initiative.18 This broader initiative evaluated and designed the 100MLives Adult Well-Being Assessment,18 a set ofreliable and validated quantitative tools included in the FamHIS questionnaire that measures well-being overall and by specific domains.19 22 Self-reported life evaluation was measured using the Cantril selfanchoring striving scale,19 which was used in the 100MLives initiative and has been used extensively in other research on national well-being in the United States and other countries.23 Participants were asked to rank their current life satisfaction and future life prospects on scales from 0 to 10, using an image of a ladder to help visualize and conceptualize the scale (Figure B, available as a supplement to the online version of this article at http://www.ajph.org). Responses of current life satisfaction greater than or equal to 7 and future life prospects greater than or equal to 8 were classified as a "thriving" life evaluation,24 the main outcome of interest in these analyses. An increase of 1 SD in the current life satisfaction score is estimated to be associated with a 1.5-year longer life t 16 expectancy.

The measured domains of well-being were physical health, mental health, social support, spiritual well-being, and financial well-being. Physical health, mental health, and social support were self-rated on 5-point Likert scales. Spiritual well-being was measured using a 7-point Likert scale that evaluated respondents' sense of purpose and life meaning. Financial well-being was measured using an 11-rung ladder similar to the Cantril self-anchoring scale. Responses were categorized as "thriving," "surviving," or "suffering" in life evaluation and in each domain of well-being using the 100MLives scoring system (Table A, available as a supplement to the online version of this article at http://www.ajph.org). For analyses of factors shaping postincarceration life evaluation, scales of social support and financial well-being were dichotomized into "high" and "low" categories corresponding, respectively, with "thriving" (social support scale ‡4; financial well-being scale ‡7) and "not thriving" for those measures.

Covariates

FamHIS included the following covariates, which were included in these analyses: respondent age, gender, race/ethnicity, education level, income, housing type, employment status, marital status, and history of drug or alcohol addiction.

Statistical Analyses

The analysis of our cross-sectional data began with a comparison of unadjusted patterns of well-being and criminal legal system exposure. We first compared proportions of respondents scored as thriving, surviving, or suffering on each well-being measure by criminal legal system exposure. We used the Kruskal-Wallis test to assess trends in wellbeing across types of criminal legal system exposure. To explore the possibility of these associations being driven by other covariates, we used 3 nested multivariate logistic regression models to estimate adjusted associations between criminal legal system exposure and the odds of a thriving life evaluation. First, we accounted for the key sociodemographic characteristics of age, gender, race/ethnicity, and education level. Next, we adjusted

for social and economic factors: employment status, housing type, marital status, and household income. Finally, we adjusted for respondents' addiction history. We estimated this set of models for each of the 3 types of criminal legal system exposure. We determined final model specifications using tests for collinearity, using a variance inflation factor cutoff of 2.0.

We also explored the potential dose dependence of these associations with time in 2 dimensions: duration of incarceration and time since last incarceration. First, we estimated age-adjusted trends in life evaluation across categories of duration of incarceration and across time points since release from incarceration. We then stratified the trends across time points since release by dichotomized levels offinancial well-being and social support.

All statistical tests were 2-sided, with an a level of0.05. We conducted all analyses in R version 3.5.1 (R Foundation for Statistical Computing, Vienna, Austria)25 and weighted them using FamHIS-specified weights to adjust the analytic sample to the US household adult population.

RESULTS

About 57% of men and 31% ofwomen had any criminal legal system exposure. Individuals with any criminal legal system exposure were more likely to be Black (P <.001), to live in lower-income households (P< .001), and to have had a history of drug or alcohol addiction (P< .001) compared with those without exposure to the criminal legal system (Table 1).

Poiice Stops

Twenty-nine percent of respondents had ever been stopped by the police and 16% had ever been stopped and frisked by the police (Table 1). In unadjusted trends (Tables 2 and 3) compared with respondents not stopped by the police, those who had ever been stopped by the police had 0.59 (95% confidence interval [CI] = 0.44, 0.80) times the odds of a thriving life evaluation, and those who were stopped and frisked by the police had 0.45 (95% CI = 0.34, 0.62) times the odds of thriving, with a dose-response association (P fortrend <.001). Those who were stopped and frisked by the police had low rates of thriving similar to the rates ofindividuals who had been incarcerated multiple times (Table 2). The fully adjusted models reflect a slight attenuation in these associations, although they remain statistically significant (Table 3).

Arrests

Thirty-one percent of respondents had ever been arrested, which is a more intense type of criminal legal system exposure than are police stops. In unadjusted trends (Tables 2 and 3), individuals who had been arrested had 0.59 (95% CI = 0.47, 0.74) times the odds of thriving compared with those with no prior arrests. This association was somewhat attenuated in magnitude with covariate adjustment but remained statistically significant with the inclusion ofsocial, demographic, and economic characteristics in the multivariate models; however, it was no longer statistically significant after adjusting for respondents' history of addiction (Table 3).

Incarceration

Twenty-three percent of individuals had ever been incarcerated for at least 1 night. In unadjusted trends (Tables 2 and 3), history ofa single incarceration (odds ratio [OR] =0.67; 95% CI = 0.48, 0.93) or multiple incarcerations (OR = 0.50; 95% CI = 0.37, 0.69) were each associated with a dose-dependent lower odds of thriving (P fortrend <.001) compared with those without incarceration experience, an association that remained statistically significant after adjusting for demographic characteristics. However, these associations were no longer statistically significant with the addition to the model of economic and social contextual factors or history of addiction (Table 3).

Longer incarceration spells were associated with roughly progressively lower proportions of age-adjusted thriving life evaluation (Figure 1a) and well-being across all domains (Figure A, available as a supplement to the online version of this article at http:// www.ajph.org). However, those with the longest incarceration spells (> 1 year) were more likely to be thriving than were those with the second longest duration of incarceration (1 month to 1 year) on all measures.

Greater time since release was associated with progressively higher proportions of age-adjusted thriving life evaluation (Figure 1b). When stratified by levels of social support (Figure 1b), respondents sampled less than 1 year since release had similar proportions of age-adjusted thriving, regardless of level of social support. However, in

comparisons across groups sampled temporally further from their last incarceration, those with high social support were progressively more likely to be thriving, whereas proportions thriving among those with low social support remained statistically stable. For respondents who had been released for more than 10 years, 85% were thriving among those with high levels of social support, but only 19% among those with low levels ofsocial support. When stratified by financial well-being (Figure 1b), there were persistent differences in probabilities of age-adjusted thriving between those with high versus low levels of financial well-being, but there was no statistically significant trend across categories of time since release within the same strata of financial wellbeing.

In addition to the life evaluation measure of overall well-being, criminal legal system exposure was associated with a progressively lower proportion ofthriving in every domain of well-being (Table Ba-c). Physical health and social well-being were especially low among those with exposures to the system. In sensitivity analyses, the progressive drop across life evaluation and each domain with exposures to police stops or arrests persisted after selecting for individuals with no incarceration history.

DISCUSSION

In the first, to our knowledge, nationally representative study of its kind, we found that each of the 3 types of criminal legal system exposure is associated with lower proportions of thriving in overall life evaluation and in every domain of well-being. There is some evidence of dose-dependent well-being associations with variation in criminal legal system exposure intensity, for example, in associations with police stops with and without searches or with single versus multiple incarcerations. Taken together, these findings provide additional evidence supporting the negative associations between one's exposure to the criminal legal system and a holistic measure of well-being.

Contrary to our initial hypothesis, the negative association between exposure to police stops with searches and odds of a thriving life evaluation was similar in magnitude to the association estimated for those who experienced multiple incarcerations, illustrating the extent to which even lowerlevel contact with the criminal legal system is negatively associated with quality of life. These associations between police contact and well-being persisted in our sensitivity analyses that excluded formerly incarcerated individuals, suggesting that this association is driven by factors independent of incarceration.

Our results highlight the continued need for improved understanding of other types of criminal legal system exposure-such as police stops-which may be less severe but potentially harmful to health.10 13,26 28 There are more than 2.5 million street stops by the police each year in the United States, with about 9% involving searches and 3% involving use of force, even though at least 85% of stops do not result in either a ticket or an arrest.28 Aggressive policing practices such as stop and frisk are associated with worse health outcomes, with increased risks of exposure to physical, psychological, and sexual violence,26 and are associated with higher levels of anxiety and trauma.10 Our study is the first, to our knowledge, to show associations with a more holistic measure of well-being that includes physical health. Future studies can better characterize how exposure to police stops is associated with decreased well-being and identify potential mechanisms that promote the recovery of well-being, especially in overpoliced communities.

Finally, our findings underscore the importance of financial well-being and social support as important factors that are likely important in the recovery of well-being after incarceration. Our multivariate analyses show that the association between prior incarceration and well-being is attenuated after controlling for economic and social factors such as household income, marital status, and addiction history. Although our crosssectional data cannot disentangle the temporality of the interplay between addiction, incarceration, and well-being, when seen together with our analyses of trends in well-being across time points among formerly incarcerated individuals, our data suggest that broader social and financial factors may be important mediators or modifiers ofthis association. This is consistent with previous studies on the role of social support for postrelease mental health and the role of financial security in facilitating successful reentry.29 Future studies can better characterize the role of addiction in the relationship between incarceration and well-being and can explore interventions that improve social support and financial well-being among formerly incarcerated individuals.

Limitations and Strengths

These findings are primarily limited by the self-reported and cross-sectional nature ofthe data. FamHIS study measures are vulnerable to recall bias and social desirability bias, which are challenges faced by many key data sources on incarceration and its relation to health.30 Additionally, because this was a crosssectional study, the findings cannot address the temporality of criminal legal system exposures and well-being, much less causal effects. Furthermore, community-level spatial factors are likely important drivers of wellbeing and were not included in the FamHIS. Finally, although the FamHIS draws on the nationally representative NORC panel, which allows inference to the broad population of all US noninstitutionalized adults, this address-based panel excludes individuals who were homeless or institutionalized at the time of data collection. Although the lack of currently incarcerated individuals in the study sample should not affect inferences about formerly incarcerated individuals, the lack of individuals experiencing homelessness or otherwise institutionalized individuals in the FamHIS may skew these data. This is a shared challenge of research on the consequences of criminal legal system exposure, as no nationally representative data capturing well-being and including these groups are currently available.31

Some limitations ofthese analyses point to potentially important avenues for future research. The FamHIS data do not allow distinguishing jail and prison contexts and also do not allow longitudinal observation over time with respect to duration or frequency of incarceration. Future exploration of variation in well-being across incarceration contexts and longitudinally over time is therefore important, especially for elucidating the role of addiction in our observed associations.

Nonetheless, our study design is strengthened by our use of a large, nationally representative study sample with high-quality sampling methods and low levels of missing data to ensure representative distributions of age, gender, race/ethnicity, and income. Our findings are compelling with their strong associations, dose gradients with degree of criminal legal system exposure, and consistency across all measures ofwell-being. Lastly, we used a robust measure of well-being to provide novel insight into the effects of the criminal legal system.

Public Health Implications

These analyses point to some key implications for public health and policy reform. First, this study corroborates the previously documented role of incarceration as a strong social and structural determinant of wellbeing in a nationally representative sample, further highlighting the importance of interventions that prevent incarceration. Second, our findings suggest the importance of social support and financial well-being in promoting well-being and the need for policy reforms that support the social, financial, and health outcomes of this vulnerable population.8,32,33 Finally, our findings on the strong relationship between lower-level police contact and well-being highlight the need for more research on the individual- and community- level effects ofpolice contact on health and well-being. Empirically measuring well-being and lived experience can provide novel insights for health policy decisions and criminal justice reform efforts, with an aim to fostering thriving in every domain of life.

CONTRIBUTORS

R. Sundaresh originated the research question and analysis design, conducted the data analysis, and coordinated the writing of the article. Y. Yi, B. Roy, C. Wildeman, and E.A. Wang participated in analysis design. Y. Yi supervised data analysis. Y. Yi and E. A. Wang developed the original questionnaire. B. Roy and C. Riley developed the outcome measure. C. Wildeman designed, developed, and implemented the original questionnaire. C. Wildeman and E. A. Wang coordinated data acquisition. E. A. Wang supervised the data analysis and the writing of the article. All authors participated in writing the article.

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Note. The opinions expressed here are those of the authors and do not necessarily reflect or endorse the views of FWD.us.

CONFLICTS OF INTEREST

C. Riley and B. Roy receive funding from the Institute for Health Care Improvement and from Heluna Health to support their efforts in developing and implementing the measurement framework for the 100 Million Healthier Lives

initiative. The measure of well-being used in this study was originally developed for 100 Million Healthier Lives. The remaining authors have no conflicts ofinterest to report.

HUMAN PARTICIPANT PROTECTION

The Yale School of Medicine institutional review board classified this study as exempt from further review because we used preexisting de-identified data.

Sidebar

Correspondence should be sent to Ram Sundaresh, 35 Cottage Street, New Haven, CT 06511 (e-mail: ram.sundaresh@ yale.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

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DETAILS

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Reproductive Justice Disrupted: Mass Incarceration as a Driver of Reproductive Oppression

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ABSTRACT (ENGLISH)

We describe how mass incarceration directly undermines the core values of reproductive justice and how this affects incarcerated and nonincarcerated women. Mass incarceration, by its very nature, compromises and undermines bodily autonomy and the capacity for incarcerated people to make decisions about their reproductive wellbeing and bodies; this is done through institutionalized racism and is disproportionately done to the bodies of women of color. This violates the most basic tenets of reproductive justice—the right to have a child, not to have a child, and to parent the children you have with dignity and in safety. By undermining motherhood and safe pregnancy care, denying access to abortion and contraception, and preventing people from parenting their children at all and by doing so in overpoliced, unsafe environments, mass incarceration has become a driver of forms of reproductive oppression for people in prison and jails and in the community.

FULL TEXT

We describe how mass incarceration directly undermines the core values of reproductive justice and how this affects incarcerated and nonincarcerated women.

Mass incarceration, by its very nature, compromises and undermines bodily autonomy and the capacity for incarcerated people to make decisions about their reproductive wellbeing and bodies; this is done through institutionalized racism and is disproportionately done to the bodies of women of color. This violates the most basic tenets of reproductive justice-the right to have a child, not to have a child, and to parent the children you have with dignity and in Safety

By undermining motherhood and safe pregnancy care, denying access to abortion and contraception, and preventing people from parenting their children at all and by doing so in overpoliced, unsafe environments, mass incarceration has become a driver of forms of reproductive oppression for people in prison and jails and in the community. (Am J Public Health. 2020; 110: S21-S24.

doi:10.2105/AJPH2019. 305407) Kima gave birth to baby Koia on a bright fall day. It was an uneventful birth, except for the looming presence of a sheriff s deputy stationed outside the delivery room. Kima-a pseudonym of an actual incarcerated mother whose full narrative is documented in the book Jailcare: Finding the Safety Net for Women Behind Bars1-was incarcerated at the local jail, charged with shoplifting and violating probation, and could not afford her bail. Kima was allowed to bond with and breastfeed her baby in her postpartum room-until 12 hours after birth, when a nurse abruptly removed the baby from Kima's arms and nervously explained that the baby had to go to the nursery. Child protective services had put a police hold on baby Koia-which meant that Kima could only spend time with the baby there, one arm chained to a wheelchair and a deputy lurking nearby-because Kima's sister, who agreed to care for the baby until Kima's release, had a child protective services record. Although a supervisor later indicated that the police hold was unnecessary, it was too late for Kima, who had already returned to jail.1 While the child protective services worker's actions may have been legal, they were not ethical

or just. Kima's experience illuminates the ways that mass incarceration in the United States disrupts the core principles of reproductive justice: the right to have children, the right not to have children, and the right to raise children in safety and with dignity.2 Reproductive justice addresses reproductive oppression-the regulation and exploitation of individuals' bodies, sexuality, labor, and procreative capacities as a strategy to control individuals and entire communities.2 Examining the broader context of Kima's reproductive life-as a Black woman whose life was shaped by racism, sexual trauma, addiction, poverty, chronic recidivism, and homelessness- makes clear that structural inequities made her vulnerable both to being targeted by carceral institutions and to reproductive oppression, so much so that a child protective services worker had the ability to inappropriately deny her the right to

be with her baby. This recognition requires us to consider how mass incarceration and its violation of reproductive justice are
intimately entwined. Mass incarceration is a term that refers to the exponential, unprecedented, and disparate rise in the number of people behind bars in the United States since the early 1980s. It is a phenomenon with intersecting political, social, and economic dimensions that are rooted in White supremacy and whose policies have led to the disproportionate imprisonment of people of color.3 This includes the proliferation of private prisons and prison health care companies that profit
from imprisoning people.3 We argue that the disproportionate hyperincarceration of Black individuals and other historically marginalized groups violates the principles of reproductive justice, and that the entire phenomenon of mass incarceration must be understood through the lens ofreproductive justice to more fully grasp its ubiquitous reach into society. In this light, it becomes clear that mass incarceration perpetuates the conditions that sustain reproductive inequities throughout US society. WHAT
IS REPRODUCTIVE JUSTICE? Reproductive justice is a that integrates reproductive rights, human rights, and social justice. This concept was developed in 1994 by 12 Black women, who, while attending a pro-choice conference in Chicago, sought to create a more expansive framework to understand and address reproductive health and rights.2 Although they did important work, the reproductive rights and reproductive health movements often neglected the impact of structural conditions that shape reproductive experiences. These conditions manifest as systems of oppression based on race, ability, class, gender, sexuality, age, and immigration status. They intersect and affect the ability of individuals to control their reproductive life course. Reproductive justice recognizes that control over one's fertility is complex and cannot be fully understood outside the social conditions that affect it-including the racialized phenomenon of mass incarceration and its historical relationship to slavery and Jim Crow.2,4 The pioneers of reproductive justice built on Black feminist thought and saw a need for a broader framework for achieving justice for women and girls, their communities, and others who had been historically marginalized and disenfranchised.5
The reproductive justice framework holds three tenets at its core. Every woman has the human right to
* Decide if and when she will have a baby and the conditions under which she will give birth,
* Decide if she will not have a baby and her options for preventing or ending a pregnancy, and
* Parent the children she already has with the necessary social supports in safe environments and healthy communities and without fear of violence from individuals or the government.
In the linking of the human rights framework with Black feminist theory, we recognize that people may require differing supports to achieve these rights based on intersecting oppressions that are unique to an individual's life. Reproductive justice connects reproductive oppression to struggles for social justice and human rights by focusing on the roles that social institutions- such as prisons and jails-the environment, economics, and culture play in each woman's reproductive life.2
Women behind bars have been largely eclipsed in broader discussions on health care for incarcerated people, criminal legal system reform, and critiques of the negative impact of incarceration on health status and outcomes. This is evident in common descriptions of incarceration rates. Recent attention to the declining prison population ignores that the number ofincarcerated women continues to rise, with more than 225 000 women in jails and prisons in 2017, representing more than a 700% increase since 1980.6,7 Women, especially women of color like Kima, have been disproportionately affected by the criminalization of poverty-incarcerating people for poverty that results from neoliberal market inequalities8-and the policies of the "war on drugs."9 Statistically reflecting this racialized phenomenon, 53% of sentenced female prisoners were women of color in 2017.6 Black women are twice as likely to be incarcerated as White women, and 1 in 18 Black women will be imprisoned in her life, compared with 1 in 111 White women.6,10 Seventy five percent of incarcerated women are of reproductive age, and two thirds are mothers and the primary caregivers to young children.6,11 Incarceration of these mothers leaves a large population of children functionally orphaned without caregiver stability.11
Up to 80% of women report being sexually active with men in the months before incarceration, with less than 30%

reporting consistent use ofcontraception at the time ofincarceration.12 Some women will, therefore, be pregnant at the time of incarceration, and the care they receive-or do not receive-can significantly influence their health and the outcome of their pregnancies.13,14 Until 2019, there were no national statistics about pregnancy outcomes in incarceration settings. Such a data omission calls attention to the ways that incarcerated pregnant people have been overlooked. A 2019 study of state and federal prisons reported nearly 1400 admissions of pregnant people, more than 750 live births, almost 50 miscarriages, and only 11 abortions in one year.15 The nature of the carceral system's role in separation, punishment, and domination means that these pregnancies are inherently marked by infringements on reproductive justice. The forces leading to rising and racially disproportionate rates of incarceration overlap with reproductive oppression through persistent devaluation and control of people's reproductive well-being. We explore those overlaps further.

THE RIGHT TO HAVE CHILDREN

At its most basic level, incarceration interferes with people's abilities to decide if and when to have children. Although jail stays may be short, current sentencing laws can keep women behind bars for a long time. Because a woman's fertility in general declines with age, this means that a woman who is released from prison after a lengthy sentence will have less fecundity than when she entered. Given that most incarcerated women are confined during their childbearing years, and given that imprisonment generally precludes procreation, incarceration violates this first tenet of reproductive justice; because men's fertility is not time dependent, this is a reproductive oppression that is unique to incarcerated women.

The right to have children also includes the right to determine the conditions in which one gives birth. Medical standards and best practices for obstetrical health care apply to all pregnant, birthing, and postpartum people regardless of incarceration status. Yet available evidence shows that many jails and prisons provide substandard, minimal, or even dangerous prenatal care.13,14 And although some individuals may access care in prisons and jails that they would otherwise not receive, this reality reflects the broader deficiencies of a social safety net that fails to adequately address the needs of people on the margins of society.1

This variability in prenatal care stems, in part, from the lack of mandatory standards or oversight in incarceration health care. Despite the Supreme Court's declaration that incarcerated people have a constitutional right to health care,16 there is no agency that oversees health care in prisons or jails or requires that they provide a certain basic set of health care services, including pregnancy care. When incarcerated pregnant people are denied the care that they need, it is in direct violation of this constitutionally protected right. Moreover, despite national health care organization guidelines, incarcerated pregnant people are shackled to beds and kept in solitary confinement, in direct violation of United Nations Rules for the Treatment of Women Prisoners.17 As of December 2019, only 29 states, the District of Columbia, and the federal government had antishackling laws in place. Even in states with antishackling laws, the practice still routinely happens, owing in part to a lack of oversight and accountability of custody officers, hospitals' lack of awareness of the laws, and punitive attitudes toward pregnant incarcerated people.18

It is common for incarcerated mothers to be separated from their newborns within less than 24 hours of birth. This practice disrupts important bonding time and denies both the mother and the infant the benefits that come from breastfeeding. Such was the case for Kima, the woman described earlier. Black women and other women of color carry the heaviest burden, as they are disproportionately incarcerated and more likely to die in childbirth than White women, as a result of many factors, including embedded racism in health care systems.

Incarceration also violates the rights ofwomen to have children through coercive contraceptive and sterilization practices. For instance, women in California prisons were unlawfully sterilized without consent as recently as 2010.20 These practices share legacies of forced sterilization of other historically devalued and oppressed groups-such as immigrants and people with disabilities, including psychiatric disabilities.5 Recognizing the potential for coercion in incarcerated settings, the American College of Obstetricians and Gynecologists advises that incarcerated women generally not undergo tubal sterilization while in custody.21

THE RIGHT NOT TO HAVE CHILDREN

The reproductive rights movement has historically focused on protecting the legal rights to choose and access contraception and abortion. However, the ability to secure these rights is constrained when access to care is limited, bodily autonomy is controlled, and physical movement is restricted, as is the case with incarceration. In other words, the notion of reproductive "choice" is irrelevant.

The courts have affirmed that women's constitutional right to abortion exists even during incarceration.22 However, realizing this right in a system designed to control and dominate all aspects ofan individual's life can be nearly impossible. Barriers created by institutions of incarceration may include absent or prohibitive written abortion policies, requiring women to pay for the abortion or transportation to the facility where she is to obtain an abortion, or mandating a court order for what is labeled an "elective procedure."22 Such policies are undue burdens for incarcerated people. Forinstance, many incarcerated women cannot afford the procedure or custody transportation cost requirements; were they not incarcerated, they might have insurance or be in a state where Medicaid covers their abortion- but Medicaid is suspended upon incarceration.23 Getting a court order to be allowed to have an abortion adds complicated logistics and time to the process, notable for a medical procedure that is time sensitive. These carceral impediments can all result in delays or an outright inability to have an abortion, effectively forcing women to continue pregnancies against their will as part oftheirpunishment.22 Such incarceration-specific barriers play out in a broader context in the United States, where restrictive laws have already limited abortion access for all women.

Accessing contraception during incarceration can prove equally problematic. Although most incarcerated women plan to resume sexual activity with heterosexual partners within six months of their release and the majority want to start contraception before release, few prisons and jails provide access to contraception.12,24 Most do not even permit women to continue preincarceration methods; temporarily discontinuing birth control puts women, particularly those in short stay jails with unpredictable release dates, at especially high risk of unplanned pregnancy upon reentry. Incarceration thus interferes with women's efforts to avoid unwanted pregnancies.

THE RIGHT TO RAISE A FAMILY WITH DIGNITY

Mothers who are incarcerated are immediately prevented from raising their families with dignity and in safety because they are confined. They are also more likely to lose their children to the foster care system and are more likely to lose their parental rights than incarcerated fathers and those who neglect, abuse, and sexually molest their children.11 Reinstating parental rights after release can be challenging, especially if children have been placed in state custody. Incarcerated mothers are released into circumstances in which they often have difficulty accessing housing, employment (especially because many employers will not hire those with a criminal record), and other resources; these factors impair their ability to raise their children in safety and with dignity after incarceration. Furthermore, the intergenerational impact of incarceration also signals the limitations on their abilities to raise flourishing families. In addition to being more likely to be incarcerated than those without an incarcerated parent, children of incarcerated parents experience social stigma, isolation, and poor self-image.11 These issues make it difficult for children of incarcerated parents to develop into confident adults.

CONCLUSIONS

Mass incarceration has had a disproportionate and negative impact on Black families, including on economic stability, children's academic achievement, the involvement of child welfare and the juvenile justice system, and the overall ways it strips families of crucial bonds over time.25 Framing mass incarceration as solely a male problem, either explicitly or by the subtle omission of women, leaves out critical pieces of this debate. Focusing on Black women provides a unique opportunity to fully show the intersecting relationships between reproductive oppression, structural racism, and mass incarceration, as Black women sit at the intersection of race and gender. Black women's positionality in US society offers inroads into understanding how mass incarceration disrupts reproductive justice, as their racial and gender identity makes them targets for incarceration and violations of their reproductive rights, unlike White women.5

Central to reproductive justice is the ability to make decisions about your own fertility without fear, coercion, or violence. It is a human right that includes the ability to choose if, when, and how to have children and under what

circumstances you will be a parent. In this sense, reproductive justice exposes the ways that mass incarceration is tied to the systemic violations of human rights. These violations have contributed to the acceptance and normalization of removing children from incarcerated parents and the denial of reproductive rights and health and, thus, has made it impossible for all incarcerated people and communities of color to enjoy what it means to be fully human. Indeed, it then becomes a heuristic for recognizing reproductive oppressions throughout society. This lens is an apt way of understanding the reproductive experiences of Kima, the mother we described who gave birth in custody.

Confronting the many ways that mass incarceration and our criminal legal system routinely disrupt reproductive justice and therefore drive reproductive inequities requires significant attention in these four areas: (1) ensuring that incarcerated women have access to comprehensive, quality reproductive health care; (2) dismantling structural and institutional racism, including our own internalized racism and sexist thinking and practices; (3) promoting reproductive justice and women's health as core parts of any political agenda; and (4) developing a commitment to imagining a world without prisons. If we are going to live in a society that is equitable and that does not violate the basic principles of reproductive justice, particularly for people like Kima who are most susceptible to reproductive oppression, we need a set ofnew tools and analysis for addressing our criminal legal system and mass incarceration. Most importantly, we need imagination. We also need to always ask ourselves, does this criminal legal policy, practice, orprocedure violate any ofthe core tenets ofreproductive justice? And if we find that it does, we must commit to holding ourselves and our institutions accountable for rectifying this, to ensure we are not violating anyone's reproductive rights- no matter their status as an incarcerated or free person. >4jPI-l

Sidebar

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CONTRIBUTORS

C. M. Hayes led the writing and revision of the article. C. Sufrin and J.B. Perritt contributed to writing and revising the article. The authors contributed equally to the concept and outline for the article and compiling references.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

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Promoting Health Equity and Criminal Justice Reform: The Louisiana Experience

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ABSTRACT (ENGLISH)

Currently, 2.3 million people are incarcerated in the United States, and people of color are disproportionately represented.1 Incarcerated people face significant health disparities, including higher rates of chronic diseases, infectious diseases, addiction, and mental illness compared with the general population.2,3 Until 2018, Louisiana led the world in incarceration rates, and it remains the least healthy state in the nation. In 2011, the US Supreme Court acknowledged that a New Orleans prosecutors suppression of evidence led to a death sentence for John Thompson but ruled that the state was not liable.6 After Glenn Fords 2014 release from 30 years on death row, another district attorney refused to acknowledge Fords false imprisonment and insisted, I think we need to kill more people through use of the death penalty.7 Like much of the nation, Louisiana struggles with lack of appropriate funding for indigent defense and a bail system and supervision fees that target the poor. Primary Prevention First, recognize the policies that lead to mass incarceration as drivers of health inequity, and focus on preventing incarceration by supporting diversion, community policing, harm reduction programs, substance use treatment, and community-based mental health services. Improving Conditions of Confinement Although primary prevention of incarceration must be prioritized, the public health community should also support improvements in conditions of confinement, including appropriate medical triage on entry into jails and prisons, improved access to substance use treatment, reduction in the use of solitary confinement (particularly for punitive purposes), access to healthy food, and sufficient outdoor exercise.

FULL TEXT

Currently, 2.3 million people are incarcerated in the United States, and people of color are disproportionately represented.1 Incarcerated people face significant health disparities, including higher rates of chronic diseases, infectious diseases, addiction, and mental illness compared with the general population.2,3 Until 2018, Louisiana led the world in incarceration rates, and it remains the least healthy state in the nation. Despite this, we have made progress. We, a Louisiana-based group of medical and public health practitioners, advocates, and lawyers, provide examples of successful, cross-disciplinary, grassroots efforts to reduce incarceration and improve health. We also provide recommendations to further work in this area.

MASS INCARCERATION IN LOUISIANA

Louisianas history of mass incarceration is deeply rooted in institutionalized and thinly veiled racism. Upon abolition of slavery, many plantations became prison labor camps. The 1898 Louisiana constitution explicitly aimed to

reinforce the supremacy of the White race. People of color became systematically disenfranchised through literacy tests, poll taxes, and revoking the voting rights of people with convictions. As recently as 1974, Louisiana reinforced a law requiring only 10 of 12 jurors to reach a guilty verdict, making it easier for already disproportionately White juries to convict people of color.4 Since the 1980s, sentences have steadily grown longer, whereas parole opportunities have been lengthened or repealed. Today, Louisianas largest prison, a former slave plantation known as Angola, still forces people to work the fields for two cents per hour.

Louisiana has the second highest rate of exoneration per capita,5 raising the question of whether district attorneys seeking reelection may be incentivized to prosecute regardless of guilt. In 2011, the US Supreme Court acknowledged that a New Orleans prosecutors suppression of evidence led to a death sentence for John Thompson but ruled that the state was not liable.6 After Glenn Fords 2014 release from 30 years on death row, another district attorney refused to acknowledge Fords false imprisonment and insisted, I think we need to kill more people through use ofthe death penalty.7 Like much of the nation, Louisiana struggles with lack of appropriate funding for indigent defense and a bail system and supervision fees that target the poor. It has also faced legal challenges for its prison conditions, including the use of longterm solitary confinement, excessive temperatures in poorly ventilated cells, and inadequate health care.

COMMUNITY-DRIVEN REFORM EFFORTS

Amid these circumstances, we created the Prisoner to Patient (P2P) initiative to address health disparities driven by incarceration. Specifically, we aimed to develop community-informed health services for formerly incarcerated people, conduct participatory research, and engage in policy reform. Using the principles of community-partnered participatory research, our group assessed the health needs of formerly incarcerated individuals in Louisiana, and under the leadership of a university-based physician, we created the Formerly Incarcerated Transition Clinic, which provides care for acute and chronic illnesses for those transitioning out of incarceration.

Through collaborative efforts with the Louisiana Department of Corrections and community partners, the Formerly Incarcerated Transition Clinic, now a member of the national Transitions Clinic Network, identifies persons being released to mitigate lapses in treatment and avoid unnecessary utilization of costly health resources. This is crucial particularly for those released without medications or who receive prescriptions that cannot be filled because of lack of insurance or physician licensure issues (some Louisiana Department of Corrections physicians are allowed to practice on restricted licenses). A formerly incarcerated community health worker supports Formerly Incarcerated Transition Clinic patients in accessing health and social services for themselves and their families. A formerly incarcerated volunteer hosts a bimonthly peer-support group, which harnesses experience from those who have successfully reentered society to assist those who are newly released.

Voice of the Experienced (VOTE), a nonprofit organization originally started inside Angola prison, has been critical to these efforts. Half of the organization's staff, including both directors, have been incarcerated, and their participation has been vital to understanding the unique needs of people leaving confinement and gaining their trust.

Independently of the P2P initiative, VOTE has led the charge on criminal justice reform in Louisiana by strategic coalition building and shifting common narratives about incarceration from public safety to public health. VOTE spearheaded a three-year campaign to create the nation's most permissive public housing admissions policy in 2016. The following year, coalitions that VOTE created helped Louisiana become the first state to "ban the box" on college applications, enabling people with convictions to obtain higher education. VOTE also advocated for a justice reinvestment initiative in 2017 that included a slate of new laws addressing a range of issues, including parole opportunities, reducing fines and fees, expanding medical parole, and reducing probation time. These new policies led to an immediate release of roughly 3000 people and a sustained reduction in the prison census of about 5000 people. In 2018, VOTE, along with a growing group of diverse advocates, won the restoration of voting rights for nearly 40 000 people under community supervision and won a ballot amendment to eliminate the nonunanimous jury.

RECOMMENDATIONS

Given the links between mass incarceration and health disparities, achieving health equity in the United States will

require a systematic, community-informed approach to decarceration, promoting reentry, and policy change. Based on our experiences with developing services and implementing broad reform amid an incredibly challenging backdrop, we recommend that the public health community direct its efforts in several ways.

Primary Prevention

First, recognize the policies that lead to mass incarceration as drivers of health inequity, and focus on preventingincarceration by supporting diversion, community policing, harm reduction programs, substance use treatment, and community-based mental health services. Public health practitioners can also collaborate with criminal justice advocates on sentencing reform, elimination of cash bail, and abolition of private prisons. All efforts to develop research, interventions, and policy addressing mass incarceration must involve directly affected people and operate within an antiracist framework.

Improving Conditions of Confinement

Although primary prevention of incarceration must be prioritized, the public health community should also support improvements in conditions of confinement, including appropriate medical triage on entry into jails and prisons, improved access to substance use treatment, reduction in the use of solitary confinement (particularly for punitive purposes), access to healthy food, and sufficient outdoor exercise. Triage for sick calls should be performed exclusively by licensed health care professionals, and lack of significant findings from medical visits should never be grounds for punishment for perceived malingering. Copays for medical visits should be eliminated. We recommend the development of policy to require additional state and federal oversight of correctional health care.

Training

Additional fellowships and training programs in correctional medicine, informed by currently and formerly incarcerated people and antiracist principles, are needed. Public health curricula should address mass incarceration, and students should be encouraged to interact with people who are currently or formerly incarcerated through practicum experiences at carceral facilities or reentry organizations. Schools of public health should admit and support people with histories of incarceration.

Improved Coordination

Community-based health providers conducting social needs assessments should include questions about incarceration history and offer additional health services or referrals to community-based organizations, as needed. States should support shared health records between prisons and public health and health care facilities to promote continuity of care. State Medicaid and carceral facilities should use common formularies to ensure consistent medication access, and exposure to incarceration should be included in analysis of population health data.

Although addressing health inequities caused by incarceration is complex, there are reasonable steps that the public health community can, and must, take in partnership with affected populations. Doing so is not merely a moral imperative-it is a matter of life and death. .4JPI-I

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Sidebar

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CONFLICTS OF INTEREST

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FULL TEXT

David H. Cloud, JD, MPH; Lauren Brinkley-Rubinstein, PhD; Mary T. Bassett, MD, MPH; Jasmine Graves, MPH; and Robert E. Fullilove, EdD, served as Guest Editors for this supplement: Mass Incarceration as a Social-Structural Driver of Health Inequities. D.H. Cloud and L. Brinkley-Rubinstein conceptualized the goals, structure, and content of this special issue and jointly received a grant from the Robert Wood Johnson Foundation to support this work. They led the solicitation process for research articles and commissioned editorials and book reviews based on defined topics. D. H. Cloud and L. Brinkley-Rubinstein drafted the lead editorial, and M. T. Bassett, R. E. Fullilove, and J.

Graves provided comments and revisions. D. H. Cloud and L. Rubinstein co-wrote the editorial describing the supplements content. D. H. Cloud and L. Rubinstein worked closely with AJPH editors to evaluate peer reviews and deliver feedback to authors. M. T. Bassett and R. E. Fullilove served as mentors, and J. Graves provided instrumental support for this project.

CONFLICTS OF INTEREST

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David H. Cloud, JD, MPH, is trained in law and public health research. His work broadly focuses on drug policy and harm reduction, diverting people with mental health needs and those who use drugs away from the criminal legal system, and ending solitary confinement in state prisons. He previously worked at the Vera Institute ofJustice in New York City, an organization focused on ending mass incarceration, improving conditions of confinement, and advancing racial justice. He currently works at the School of Medicine at the University of California, San Francisco, as part of Amend, an initiative committed to addressing harmful and degrading living and working conditions in carceral settings while promoting health equity, transformative culture change, and human rights. He is a PhD candidate at the Rollins School of Public Health at Emory University and a predoctoral fellow in the Criminal Justice Research Training Program on Substance Use, HIV, and Comorbidities at Brown University. He serves on the board of directors at the Atlanta Harm Reduction Coalition.

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Role of a US–Norway Exchange in Placing Health and Well-Being at the Center of US Prison Reform

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ABSTRACT (ENGLISH)

Living and working conditions in many US correctional facilities are damaging to the health of incarcerated people and correctional staff.1,2 In response, experts have called for efforts to improve the health of incarcerated people, and correctional systems have invested in officer wellness programs.1,3 Some correctional systems outside the United States have taken a different approach to these challenges: developing a correctional culture (defined here as the values, beliefs, and norms of a correctional institution or system) that deliberately puts health, humanity, and rehabilitation at the forefront of correctional practice.4 We describe the feasibility and early results of Amend, our program adapting practices from one such system, the Norwegian Correctional Service, for implementation in four facilities in one US state correctional system housing residents of all security levels, backgrounds, and needs.

FULL TEXT

Living and working conditions in many US correctional facilities are damaging to the health of incarcerated people and correctional staff.1,2 In response, experts have called for efforts to improve the health of incarcerated people, and correctional systems have invested in officer wellness programs.1,3 Some correctional systems outside the United States have taken a different approach to these challenges: developing a correctional culture (defined here as the values, beliefs, and norms of a correctional institution or system) that deliberately puts health, humanity, and rehabilitation at the forefront of correctional practice.4 We describe the feasibility and early results of Amend, our program adapting practices from one such system, the Norwegian Correctional Service, for implementation in four facilities in one US state correctional system housing residents of all security levels, backgrounds, and needs.

POOR HEALTH IN US CORRECTIONAL ENVIRONMENTS

Until the late 1960s, US correctional facilities subscribed to the goal of rehabilitation-the belief that positive personal change could maximize incarcerated peoples postincarceration success and reduce crime. In the early 1970s, this goal was largely abandoned, and the United States entered an era of mass incarceration.5 Increasingly overcrowded correctional facilities transformed into dehumanizing, punishmentoriented regimes.5 Despite an emphasis on institutional security, many correctional facilities became plagued by violence, sexual assault, and suicide.5 Incarceration under these conditions has deeply negative physical and psychological effects that, as a result of inequitable odds of incarceration in the United States, disproportionately befall people ofcolor, the poor, and those with mental illness or substance use disorders.6

While the health of correctional officers is an understudied topic of study, emerging evidence suggests that correctional staff experience disproportionately high rates ofchronic disease and behavioral and mental health problems alongside profound environmental stress and exposure to workplace trauma.2,4 For example, the California Correctional Officer Survey (2017) documented high rates of chronic disease (e.g., diabetes 22%, heart disease 16%) among the 50% of participants who reported feeling unsafe at work.7 Symptoms of depression, anxiety, and posttraumatic stress disorder were also common; 10% of participants reported suicidal ideation.7

AMEND: CHANGING CORRECTIONAL CULTURE

A number of initiatives have sought to address the pains of imprisonment, including a national campaign to reform solitary confinement, litigation to improve correctional health care, and efforts to reduce the number of incarcerated persons. Initiatives to address correctional officer health and wellness have also been undertaken.3 These initiatives

represent important reforms, both to address the occupational health and wellbeing of a large, nationwide workforce and to ensure that prison reform initiatives have the buy-in needed to be successful, particularly from often politically powerful constituents such as correctional officer unions and correctional leadership. Yet few if any officer wellness initiatives directly address the often violent, high-stress, and dehumanizing culture inside correctional facilities. Culture change interventions are needed to ensure the safety and health of incarcerated individuals and correctional staff.

In response to this need, we developed Amend, an international exchange, officer training, and technical assistance intervention that adapts practices from the Norwegian Correctional Service for implementation in the United States. Because the US and Norwegian cultures and populations differ, the program does not directly apply Norwegian correctional policy or practice to the United States but, rather, takes Norways correctional approach as inspiration for distinctly American reforms. The Norwegian Correctional Service believes that people go to court to get punished and they go to prison to become better neighbors; their officers are trained to play an active role in residents rehabilitation by using positive incentives and motivational interviewing, engaging residents in health-focused programming and providing intensive mentorship and positive socialization. Our program works with US participants to develop correctional policies and practices that are influenced by the Norwegian approach but account for the specific needs and constraints of their particular context.

From 2015 to 2017, we enrolled policymakers and government officials in an immersive program in Norway designed to introduce them to a radically different approach to correctional work. In 2018, we expanded our program to engage frontline correctional staff to change the culture in their home institutions. We enrolled 10 participants (wardens, correctional captains, sergeants, and officers) from a US state correctional system in a 10-day learning and jobshadowing program in Norway. Upon their return to the United States, these staff were joined by 54 of their colleagues representing four correctional facilities to participate in an intensive, 20-hour training delivered across three sessions designed in partnership with the Norwegian Correctional Service and led by Norwegian officers. The training is modeled on principles of adult learning and features didactics, discussion, scenario-based learning, and practical (hands-on) exercises. Topics covered include theories of crime and punishment, behavioral psychology, risk assessment, interpersonal communication and motivational interviewing, ethics, use of force, and others.

Our preintervention questionnaires, conducted at the start of the training, confirmed that US correctional work is associated with poor health and wellbeing. For example, 60% of participants agreed that "correctional work negatively affects time with my family"; 37% reported experiencing fear ofbeing seriously injured or killed at work; and participants reported responding to approximately 2 incidents of interpersonal violence per month on average. Despite an average age of 39 years, 45% reported having hypertension, 30% reported symptoms of posttraumatic stress disorder, 40% had a positive screen for depression, 32% said a loved one had expressed concern about their drinking, and 13% said they had thought about or attempted self-harm. Moreover, while 84% believed rehabilitation should be a goal of their work, only 45% felt they made a positive difference in incarcerated people's lives.

A pre-post self-assessment of the training revealed gains in knowledge and skills including in motivational interviewing, de-escalation, risk assessment, understanding incarceration's negative effects, and reducing use of solitary confinement; 40% said the experience was "life-changing." Within 6 months of our program, all housing units from which officers were selected by exchange participants and facility leaders to participate in the training and receive technical assistance from our team reported significant changes to their operational values, goals, and practices (Table 1).

FUTURE HEALTHORIENTED PRISON REFORM

The dangerous, high-stress, and dehumanizing environments that characterize many US correctional facilities in the era of mass incarceration have worsened racial and socioeconomic health disparities and undermined the health and safety of correctional staff. Our culture change intervention successfully introduces US correctional officers to an alternative approach to correctional work that emphasizes humanity, health, and rehabilitation. Engaging correctional staff directly in prison reform is important because everyone in these systems can benefit from smaller, more humane institutions in which staff are empowered to work closely with residents to promote health, healing,

and rehabilitation. Participants' responses to the program (Table 1) are consistent with emerging evidence that humane, health-promoting, and rehabilitation-focused correctional environments enhance prison safety and produce better public safety outcomes.4,5 Our experience suggests that there are critical opportunities to develop new correctional academy training curricula, identify important skills gaps and retrain the existing correctional workforce, and pilot policy reforms that eliminate dehumanizing practices and conditions of confinement.

Addressing mass incarceration in the United States will require that everyone involved in these systems- including correctional leaders and staff-promote and support correctional cultures that are firmly rooted in humanity, health, and rehabilitation. Our program shows that the large US correctional workforce is an important if overlooked ally in this effort. ÂfPU

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Sidebar

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This study was approved by the Committee on Human Research at University ofCalifornia San Francisco.

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Family Member Incarceration, Psychological Stress, and Subclinical Cardiovascular Disease in Mexican Women (2012–2016)

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ABSTRACT (ENGLISH)

Objectives: To examine the association between family member incarceration, psychological stress, and subclinical cardiovascular disease (CVD). Methods. Between 2012 and 2016, 1849 CVD-free women from the Mexican Teachers' Cohort responded to questions on family incarceration from the Life Stressor Checklist. Perceived stress and hair cortisol levels were measured in a subset of participants. Carotid intima-media thickness was measured, and carotid atherosclerosis was determined in all participants. We used multivariable quantile, linear, and logistic regression models to evaluate the association between family member incarceration, stress, and subclinical CVD. Results. Among women with a mean age of 49.7 years (SD ±5.2), 15.3% reported family member incarceration. We found that both perceived stress and hair cortisol levels were significantly higher in women with an incarcerated family member relative to women without one. After multivariable adjustment, women who reported family member incarceration had 41% (95% confidence interval = 1.04, 2.00) higher odds of carotid atherosclerosis compared with those who did not. Conclusions. Family member incarceration was associated with robust markers of stress and cardiovascular risk. Mass incarceration may have a long-lasting impact on physical health of affected families. (Am JPublic Health. 2020;110:S71 -S77. doi:10.2105/ AJPH.2019.305397) Mass incarceration is increasingly recognized as an emerging public health concern that

FULL TEXT

Headnote

Objectives. To examine the association between family member incarceration, psychological stress, and subclinical cardiovascular disease (CVD). Methods. Between 2012 and 2016, 1849 CVD-free women from the Mexican Teachers' Cohort responded to questions on family incarceration from the Life Stressor Checklist. Perceived stress and hair cortisol levels were measured in a subset of participants. Carotid intima-media thickness was measured, and carotid atherosclerosis was determined in all participants. We used multivariable quantile, linear, and logistic regression models to evaluate the association between family member incarceration, stress, and subclinical CVD.

Results. Among women with a mean age of 49.7 years (SD ±5.2), 15.3% reported family member incarceration. We found that both perceived stress and hair cortisol levels were significantly higher in women with an incarcerated family member relative to women without one. After multivariable adjustment, women who reported family member incarceration had 41% (95% confidence interval = 1.04, 2.00) higher odds of carotid atherosclerosis compared with those who did not. Conclusions. Family member incarceration was associated with robust markers of stress and cardiovascular risk. Mass incarceration may have a long-lasting impact on physical health of affected families. (Am JPublic Health. 2020;110:S71 -S77. doi:10.2105/ AJPH.2019.305397)

Mass incarceration is increasingly recognized as an emerging public health concern that drives health inequalities in the United States.1 The Americas have the highest imprisonment rate in the world (400 incarcerated people per 100 000), with the United States leading globally as a country with more than 2 million incarcerated people.2,3 Relative to other nations, Mexico's prison population rate (163 incarcerated people per 100 000) is close to the global median.3 However, the prison population has steadily increased over past decades (see Appendix A, available as a supplement to the online version this article at http://www. ajph.org for details). And while recent changes in pretrial detention policies lowered the number of incarcerated individuals (currently at 198 475), this year's constitutional reforms are likely to result in a new spike in incarceration rates.4 Increasing incarceration in the United States and Mexico has had a disproportionate

impact on disadvantaged and marginalized individuals who have measurably been found to have poorer health statuses before, during, and after incarceration.1,5 Incarceration not only affects those incarcerated but may also negatively affect the well-being of their family and community. For example, parental incarceration appears to affect child and adolescent health.6,7 Initial evidence suggests that incarceration may also negatively influence the mental and physical health8 10 of adult family members who provide care for incarcerated people and their families during prison terms. Losing a family member to incarceration may represent a highly stressful life event that may affect cardiovascular health through altered metabolic responses and unhealthy lifestyle behaviors.11,12 Even though social context and prison conditions differ between the United States

and Mexico, understanding the health consequences of incarceration on adult family members in Mexico may elucidate health disparities in the United States. We sought to gain insight on the public health impact of mass incarceration by uniquely assessing perceived and biological measures of stress in women living in Mexico and investigating the relation between family member incarceration, stress, and cardiovascular disease (CVD).

investigating the relation between family member incarceration, stress, and cardiovascular disease (CVD).

METHODS

We conducted a cross-sectional analysis in women from the Mexican Teachers Cohort (MTC), a prospective study of 115 314 female teachers living in Mexico that began in 2006 to 2008.13 At baseline and every 3 years, participants responded to questionnaires on lifestyle andhealth. Between September2012 and June 2016, a random sample of teachers from 3 states (Chiapas, Yucatán, and Nuevo León) was invited to take part in an ancillary study on CVD. Close to 70% (n = 2390) of those invited chose to participate. Characteristics of attendees and nonattendees were similar (Table A, available as a supplement to the online version of this article at http:// www.ajph.org). We excluded women with prevalent myocardial infarction and stroke (n = 13) and those with missing information on family member incarceration (n = 322) and carotid intima-media thickness (IMT; n = 206). The current analysis included 1849 women.

Assessment of Family Member Incarceration

We evaluated stressful life events by using the Life Stressor Checklist-Revised (LSCR).14 Study participants responded to the LSC-R in a protected, private environment during the clinical evaluation. One of the questions addressed whether the respondent has or ever had a family member incarcerated. Women were asked to provide details on their age when the incarceration started and ended and on How much do you consider this event to have affected your life in the past year? (using a 5-point Likert scale from not at all to extremely affected). We did not assess LSC-Rs validity; however, we previously used the instrument in the MTC to evaluate exposure-disease relations.15 Psychological Stress and Hair Cortisol

Levels Participants responded to the Perceived Stress Scale-10 (PSS-10)16 at the same time as the LSC-R. The PSS-10 attempts to measure the degree to which life in the past month has been experienced as unpredictable, uncontrollable and overwhelming (e.g., in the last month, how often have you felt nervous and stressed?) on a 5-point response (from 0 = never to 4 = very often). We obtained a score by following standard practice.16 We found the internal consistency of the score to be high (r= 0.83) in a sample of 1310 MTC participants from Chiapas and Yucatán. In Nuevo León, (n = 631) participants provided hair samples to measure cortisol levels, a biomarker of exposure to chronic stress.17 Hair was cut as close as possible to the scalp from the posterior vertex by study personnel and stored in aluminum foil. Cortisol concentrations were determined by C. K. at a specialized laboratory from the 3-centimeter proximal hair segment (representing 3-month period before sampling) following a standardized procedure.17 We excluded women with hair cortisol plus or minus 3 SD away from the mean (n = 1) as well as those with an cortisol-to-cortisone ratio of greater than 3, which was considered implausible (n
= 15). Subclinical
Cardiovascular Disease Vascular neurologists used a SonoSite MicroMaxx ultrasound and Asus laptop with MAthStd Software (Intelligence in Medical Technologies, Paris, France) to measure carotid IMT and to detect atherosclerotic plaques following international guidelines.18 IMT was measured between the lumenintima and media-adventitia interfaces on the far wall of the common carotid artery, at least 5 millimeters below its end where the carotid bifurcation was visible. Images ofa 10-millimeter arterial segment were used to measure the mean IMT for each common carotid artery from which the overall mean was calculated. When neurologists were unable to obtain an adequate image, they repeated this procedure on the near wall. Structures protruding into the arterial lumen by 0.5 millimeters or more or 50% of the surrounding IMT or IMT greater than 1.5 millimeters were considered plaque. We assessed the reproducibility of IMT measurement (n = 147) and found it to be high- r= 0.89 (95% confidence interval [CI] = 0.84, 0.93) for Chiapas and r = 0.92 (95% CI = 0.86, 0.96)
for
Yucatán. Covariates The 2008 (baseline) MTC questionnaire included information on indigenous background (participant or her parents spoke an indigenous language), education (last completed degree), main health care provider used for important medical conditions, marital status, and smoking. We created a socioeconomic status score based on responses to owning 7 key household items.19 We updated self-reported covariates by using the 2011 MTC questionnaire whenever possible. At study sites, standardized study personnel measured weight with an electronic digital scale (Tanita Corp, Arlington Heights, IL) to the nearest 0.1 kilogram and height with a wall stadiometer (Seca Corp, Hamburg, Germany) to the nearest millimeter. We calculated body mass index (BMI) as the weight in kilograms over height in meters squared. For diabetes, hypertension, and hypercholesterolemia, we used self-reported diagnosis and treatment from questionnaires and updated this information from interviews at the clinical site. We also used clinical information obtained at study sites for diagnosis. Blood pressure measurements were collected automatically by placing the cuffs on 4 extremities (VaSera VS-1000, Fukuda Denshi, Tokyo, Japan), and fasting blood samples (25 mL) were drawn through venipuncture and processed within 30 minutes. Women with a systolic blood pressure of 140 millimeters of mercury or higher or diastolic pressure of 90 millimeters ofmercury or higher were considered hypertensive. Plasma concentrations ofglucose, total cholesterol, triglycerides, and high-density lipoprotein cholesterol were measured at the clinical laboratory in each site with standard assays. Women were classified as having diabetes when the fasting plasma glucose levels were 126 milligrams per deciliter or higher. We used fasting plasma total cholesterol of 240 milligrams per deciliter or higher or low-density lipoprotein cholesterol of 160 milligrams per deciliter or higher to determine if the participant had hypercholesterolemia. We used 5 violence-related questions from the LSC-R (physical or observed violence) to assess exposure to a violent environment.
Statistical Analysis We categorized participant exposure as having or ever having an incarcerated family member and classified according to the duration of the family member's incarceration in 2 categories based on the median duration of incarceration in this population (< 1 or >1 year; we imputed missing values to the median; n = 14). We categorized participants' experience of family incarceration according to perceived effect on daily life in low or high

severity (< 3 or ‡3 points) based on the median Likert scale responses.
We used directed acyclic graphs20 (Figures A and B, available as supplements to the online version of this article at http:// www.ajph.org) to articulate our research questions and guide our analytical strategies (i.e., variable selection to adjust for confounding, mediation analyses). First, we compared PSS-10 scores in women with and without a history of family member incarceration. We used age-, site-, and multivariable-adjusted linear regression models to assess the adjusted mean difference in PSS-10 scores and 95% CIs. We included age (continuous), health care provider (public, private, or other), indigenous background, education (high school, bachelors, or masters), marital status (single, together, or divorced or widowed), socioeconomic status score (tertiles), and exposure to violence. We selected variables used to adjust for confounding based on risk factors for cardiovascular disease, previous stress- CVD literature,21 and proposed frameworks for studying stress and disease in human populations.22
Second, we evaluated hair cortisol levels according to family member incarceration exposure. Hair cortisol residuals were not normally distributed even after log-transformation (P< .001 for the Shapiro-Wilk test). Thus, we fit age- and multivariable-adjusted quantile regression models to determine the adjusted median difference and 95% CIs in hair cortisol levels.
Finally, we compared log-transformed IMT values23 and carotid atherosclerosis (mean left or right IMT ‡0.8 mm or plaque) in women with and without family member incarceration. We estimated percentage differences in mean IMT by using age-, site-, and multivariable-adjusted linear regression models and odds ratios (ORs) for carotid atherosclerosis by using similarly adjusted logistic regression models.
We explored effect measure modification by including a cross-product term of family incarceration and median age (< 49 or ‡49 years), state of residence, and ethnicity as the effect on CVD may vary depending on these factors. We compared models with and without the cross-product term by using a likelihood ratio test. Perceived stress, cortisol levels, smoking, BMI, diabetes, hypertension, and hypercholesterolemia may mediate the impact of family member incarceration on cardiovascular health (Figure A).11 For carotid atherosclerosis, we used the counterfactual approach to conduct a mediation analysis24 to estimate the natural direct and indirect effects for each potential mediator independently and calculated the proportion mediated for those suggesting significant effects. We repeated analyses in which smoking, BMI, diabetes, hypertension, and hypercholesterolemia were included in the model to adjust for confounding (Figure B). We performed post hoc analyses exploring results of women classified according to recentness of exposure (current or less-recent incarceration). All statistical tests were 2-sided using a P value of less than .05, and we performed analyses with SAS version 9.4 (SAS Institute, Cary, NC).

RESULTS

The mean age of study participants was 49.7 years (SD ±5.2) and median age was 49 years (interquartile range = 46-53 years). The prevalence of family member incarceration was 15.3% (n = 283). Of exposed women, 65.8% reported that their family member was either currently or recently (< 1 year) incarcerated, and 40.0% perceived that the event had a severe effect on their life. Women with an incarcerated family member were more often indigenous, divorced, and had a lower socioeconomic status than women without one. Exposed women were also more likely to smoke, be obese, and have diabetes, and were more frequently exposed to violence relative to their unexposed counterparts (Table 1).
Table B (available as a supplement to the online version of this article at http://www. ajph.org) compares study participants with those excluded from the analysis because of missing information. We observed slight differences in characteristics between groups (except women with missing data were less likely to be from Nuevo León). We observed a difference in women with and without hair cortisol that is likely driven by location (hair cortisol was measured only in Nuevo León; Table C, available as a supplement to the online version of this article at http://www.ajph.org). This subgroup had a higher educational level and socioeconomic status (and only a few were indigenous) and were more likely to be obese and more frequently exposed to violence.
The subgroup for whom PSS-10 was available did not differ from the full study population (Table D, available as a supplement to the online version of this article at http://www.ajph.org). Among the 1690 (91.4%) women who completed the PSS-10, the mean score for those with family member incarceration was 15.6 (SD ±6.0) whereas the

corresponding score for women without one was 12.5 (SD ±5.8). After multivariable adjustment, we found a statistically significant difference in mean PSS-10 scores comparing exposed and unexposed women (1.4; 95% CI = 0.6, 2.1; Table 2). We observed a suggestion that the difference may be slightly stronger in women who reported a shorter duration of incarceration and those who reported a high versus low effect on their daily life. Among the 615 women with valid cortisol levels, those with an incarcerated family member had significantly higher median cortisol levels than women without one (Figure 1). The multivariable-adjusted median difference was 1.40 picograms per milligram (95% CI = 0.30, 2.50).

We observed no association between family member incarceration and mean IMT (% difference = 0.6; 95% CI = -1.0, 2.2; Table 3). However, women who reported exposure to family member incarceration had 41% higher odds of carotid atherosclerosis relative to those who did not (multivariableadjusted OR =1.41; 95% CI= 1.04, 2.00). The magnitude ofthe association appeared to be higher for women with a longer duration offamily member incarceration. In a post hoc analysis, differences in PSS-10 appeared to be lower but IMT percent differences higher in women with a currently incarcerated family member compared with women without family member incarceration (Table E, available as a supplement to the online version of this article at http://www.ajph.org).

The impact of family incarceration on carotid atherosclerosis appeared to differ across states and ethnicity, but tests for heterogeneity were not statistically significant (Table F, available as a supplement to the online version of this article at http://www. ajph.org). The OR for carotid atherosclerosis in Chiapas was 1.64 (95% CI = 0.98, 2.73) while the corresponding estimate in Nuevo León was 1.13 (95% CI = 0.64, 2.00; P value for interaction = 0.58). Similarly, the association appeared to be stronger in indigenous (OR = 1.96; 95% CI = 0.86, 4.50) relative to nonindigenous women (OR = 1.32; 95% CI = 0.94, 1.84; P value for interaction = 0.17).

We performed an additional sensitivity analysis adjusting for CVD risk factors that may be intermediates: smoking, BMI, diabetes, hypertension, and hypercholesterolemia. The adjusted median difference for cortisol was minimally affected and remained significantly different (1.48 pg/mg; 95% CI = 0.22, 2.74) and our results for perceived stress did not change (Table G, available as a supplement to the online version of this article at http://www.ajph.org). However, controlling for CVD risk factors slightly attenuated the association between family member incarceration, IMT, and carotid atherosclerosis (Table H, available as a supplement to the online version of this article at http:// www.ajph.org).

We considered potential confounders of the exposure-outcome or mediator-outcome association in the mediation analysis, and we included exposure-mediator interaction for perceived stress based on the literature22 and because it meaningfully changed the estimate for the natural indirect effect. Our results suggested that both perceived stress and BMI might mediate the association between family incarceration and carotid atherosclerosis (Table I, available as a supplement to the online version of this article at http://www.ajph.org). The proportion mediated by perceived stress was 21.3% (95% CI = -2.2, 25.8) and that forBMI was 18.8% (95% CI = 0.00, 19.3). We explored the mediating effect of cortisol levels in women with available measurements but chose not to report results because of imprecision attributable to a small sample size.

DISCUSSION

In this sample ofMexican women, family member incarceration was significantly associated with perceived stress scores, hair cortisol, and subclinical carotid atherosclerosis (even after adjustment for factors that may be intermediates). Participants who reported family member incarceration had characteristics that may reflect unhealthy behaviors. Our results indicate that the association between family member incarceration and CVD may in part be mediated by stress and unhealthy lifestyle choices.

Chronic stressors result in an abnormal activation of the hypothalamic-pituitary- adrenal axis and the autonomic nervous system.12,22 The release of cortisol and catecholamines from the adrenal glands increases heart rate and blood pressure and, when sustained, this activation may result in inflammation, atherosclerosis, and CVD.25,26 Physiological reactions are often combined with coping mechanisms such as smoking, unhealthy diets, lack of physical activity, and weight gain which may further negatively affect cardiovascular health.25 Our results are consistent with emerging literature on the physiological, behavioral, and long-term effects of stressful experiences on

cardiovascular health.27-29

Incarceration is recognized as a highly stressful event for families.30 Previous research into the family consequences ofincarceration has often focused on financial and nonphysical health outcomes and on the health of children of incarcerated parents.1,6 Our study makes an important contribution to the limited literature on the cardiovascular health impact of incarceration on adult family members. Only 2 previous studies have documented that family member incarceration was associated with self-reported cardiovascular disease.9,10

We explored different aspects ofthe family member incarceration including duration, recentness, and the incarceration's impact on current life with perceived stress and CVD. For stress, estimates were slightly higher among women with a family member who was incarcerated for 1 year or less versus more than 1 year. By contrast, the association between family incarceration and carotid atherosclerosis appeared to be stronger among women reporting a longer duration of incarceration. These results were unexpected. We hypothesized that longer duration of family member incarceration would be more strongly associated with perceived stress and CVD.31 However, the stress score only captured stress levels over the past month so there may be some variability over time, whereas atherosclerosis reflects a slower progressive process.

In a post hoc exploration of the impact of less-recent versus current incarceration, we found slightly higher stress scores in women reporting less-recent incarceration and no differences in the odds of carotid atherosclerosis. The associations did not differ according to the impact of incarceration on daily life. Duration, recentness, and the incarceration's impact on current life are distinct aspects ofstressful experiences that are often correlated. We were limited by sample size in our ability to evaluate these aspects independently. We observed much higher odds of carotid atherosclerosis in indigenous relative to nonindigenous women and a suggestion of heterogeneity across states (with a stronger association in states with more indigenous women). These findings may represent differences in the experience of incarceration attributable to discrimination or prison conditions.32

Strengths and Limitations

Our study has important strengths, including its population-based design, the use of a valid measure of psychological stress, and a novel, reliable biomarker for stress, in addition to our high-quality standardized assessment of subclinical CVD and our mediation analyses.

However, several limitations must be considered. First, in this cross-sectional study we cannot exclude reverse causation. Poor health and stress may affect the recall ofdetails regarding the incarceration (e.g., duration). However, it is unlikely that these factors resulted in overreporting of incarceration.

Second, underreporting of family incarceration because of stigma is possible. Interestingly, the prevalence of family member incarceration in our study population was almost 2 times what was observed in a similar study in the United States (15% vs 8%).9 The incorrect classification of individuals according to carotid atherosclerosis is unlikely to differ because women were unaware of outcome measures. If this had occurred, this misclassification would have resulted in an underestimation of the strength of the association.

Third, like any observational study, the concern that cardiovascular risk factors associated with family incarceration may explain the association cannot be eliminated. In our main analyses, we adjusted for several sociodemographic characteristics and uniquely included exposure to violence. However, there is a possibility that lifestyle and proximal cardiovascular risk factors (e.g., obesity) may be associated with family member incarceration through an unmeasured variable (Figure B, available as a supplement to the online version of this article at http://www.ajph.org). We evaluated the impact of considering lifestyle and proximal risk factors for CVD confounders and our conclusions remained the same.

Fourth, hair cortisol was available only in women from Nuevo León. The impact of family incarceration on stress may differ across states. It is possible that the magnitude of the family incarceration-hair cortisol association may be even stronger in the states that did not have hair cortisol levels as was suggested by our analysis on carotid atherosclerosis.

Fifth, the instrument used to assess family member incarceration did not capture important details. For example, we cannot differentiate which family member was incarcerated or understand imprisonment conditions.

Sixth, our mediation results should be interpreted with caution because they rely on strong assumptions that are difficult to test.

Finally, our results may not be generalizable to men. Women generally shoulder most of the burden of care for incarcerated people and may be more vulnerable than men to the consequences of family incarceration.

Public Health Implications

Mass incarceration may have a long-lasting impact on physical health of affected families and may play a role in health disparities. This study in Mexico provides unique evidence on the potential role of stress-disease pathways in the cardiovascular consequences of mass incarceration on families. Even though the United States and Mexican prison systems differ, extortion of incarcerated people, lack of resources, and poor living conditions of incarcerated people are common in both contexts.1,33 These 2 contexts likely present similarities in the stress of caretaking for incarcerated people while handling the consequences of their incarceration.

Elucidating family member incarcerationrelated stress and specific physiological pathways (e.g., inflammation, endothelial function) that link this experience to CVD will require long-term longitudinal studies with repeated biomarker measurements and clinical cardiovascular outcomes (e.g., myocardial infarction). Future studies should also seek to capture important details to make distinctions on which family member was incarcerated (e.g., sibling), nature of the crime (violent vs nonviolent), type of incarceration (e.g., pretrial), and length of sentencing. Also, evaluating emotional distress, loss ofincome, and financial burden as well as stigma may provide opportunities for interventions to lower the burden of incarceration on families. Addressing stress-related symptoms could mitigate their cardiovascular impact.31 While enhancing perception of social support and reducing negative thinking on single mothers has shown to reduce or improve stress management,34 developing effective family-focused interventions to lower stress on caregivers of children with incarcerated parents is necessary.35 Beyond reevaluating incarceration policies contributing to mass incarceration and ensuring adequate living conditions for incarcerated people, primary care providers in affected communities need to address family member incarceration in clinical practice. ÂfPU

CONTRIBUTORS

Sidebar

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K. Connors and M.H. Flores-Torres were co-first authors; they designed and conducted the statistical analysis, interpreted results, wrote the first draft, and reviewed the final version of the article. D. Stern oversaw the statistical analysis and reviewed the article for intellectual content and accuracy. U. Valdimarsdóttir conceptualized the study, designed the data collection tools, interpreted results, and reviewed the article. J. R. Rider designed, implemented, and interpreted mediation analyses and reviewed the article. R. Lopez-Ridaura conceptualized and designed the study, oversaw data collection and processing, interpreted results, and reviewed the article. C. Kirschbaum conducted hair cortisol measurements, interpreted study results, and reviewed the article. C. Cantú-Brito designed and oversaw intima-media thickness measurement and reviewed the article. A. CatzinKuhlmann conceptualized the

study, reviewed data collection tools, interpreted results, and reviewed the article. B. L. Rodriguez designed and oversaw data collection in Nuevo León andreviewed the article. C. PérezCorrea conceptualized the study question, reviewed family incarceration data, interpreted results, drafted the supplement on incarceration in Mexico, and reviewed the article. M. Lajous conceptualized and designed the study, oversaw data collection and processing, designed and reviewed statistical analyses, interpreted results, reviewed the article, and wrote the final draft.

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CONFLICTS OF INTEREST

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HUMAN PARTICIPANT PROTECTION

All study participants provided informed consent. The study was approved by institutional review boards at the Instituto Nacional de Salud Pública (National Institute of Public Health) and Tecnologico de Monterrey, Escuela de Medicina y Ciencias de la Salud.

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DETAILS

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The Role of Academic Public Health in Reducing Incarceration

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ABSTRACT (ENGLISH)

By way of illustration, among children born in 1990, 1 in 25 Whites and 1 in 4 Blacks had a parent imprisoned by age 14 years,6 an increase in magnitude and racial disparity compared with those born in 1978. [...]incarceration is a prevalent challenge to the health of the US population and contributes in innumerable ways to health gaps. [...]academic public health is entrusted with training the next generation of scholars and developing the public health workforce. [...]academic public health aspires-or should aspire-to translate their knowledge and make their scholarship accessible to those who are producing change.

FULL TEXT

In 2018, there were 2.3 million people1 in the US state and federal prison population. The US incarceration rate (716 per 100 000 people) is higher than that of any other country in the world2 and about five times higher than the median worldwide (144 per 100 000).3

There is little doubt that incarceration affects health. The disability-adjusted life year rate linked to incarceration is more than double4 that attributed to other conditions commonly experienced in the general population. Much of this disability arises from the disenfranchisement of the formerly incarcerated,4 including bans on employment and social

welfare benefits such as housing and public assistance. Prison enhances the transmission of infectious diseases,4 such as tuberculosis and viral hepatitis, because of the cramped spaces, high rates of injection drug use, and unprotected sexual relations endemic in incarceration populations. Annually, approximately one in seven Americans with HIV/AIDS4 passes through the prison system, reflecting a convergence of increases in drug-related incarceration and the emergence of this bloodborne virus and concentrating infection risk in this setting.

Another convergence-that ofincarceration and mental illness -is the cause of substantial morbidity and, in the case of suicides, mortality among those who are incarcerated. A review of the evidence suggests that the prevalence of mental illness5 among those incarcerated is substantially higher than estimates from community samples.

Importantly, the burdens and consequences of incarceration are borne unevenly across US society, with minority populations- particularly Black and Latinx populations-being vastly and disproportionately affected by incarceration. By way of illustration, among children born in 1990, 1 in 25 Whites and 1 in 4 Blacks had a parent imprisoned by age 14 years,6 an increase in magnitude and racial disparity compared with those born in 1978.

Therefore, incarceration is a prevalent challenge to the health of the US population and contributes in innumerable ways to health gaps. This suggests that the field of public health should be concerned with incarceration as a cause of health inequities and overall poor population health. With this understanding, incarceration fits squarely within the remit of schools and programs ofpublic health, which are near uniformly motivated by a goal of improving population health and addressing health disparities.7 What role could academic public health then play in reducing incarceration and mitigating its consequences? At core, schools and programs have a responsibility to generate scholarship that can help us understand the health of populations, train the next generation of public health scholars, and translate their scholarship as evidence for advocacy and policymaking for generating meaningful change. We suggest that "academic public health," the term we use here to refer to schools and programs of public health, can play a role in reducing incarceration and mitigating its consequences along each ofthese core functions.

First, it falls to academic public health to generate the science and scholarship for informing the health conversation. This is far less straightforward than it may seem at first glance. The research endeavor in most academic institutions is funded extramurally; it depends on donor imperatives. Incarceration is seldom a priority topic for federal funders or a focus ofprivate foundations, suggesting that scholars interested in the question need to be creative in their approach to funding this work. Academic public health has an opportunity to elevate the visibility of the issue by being clear and unequivocal that incarceration is a core public health concern in the field's remit. In some respects, funding becomes available when scholars articulate areas of research priority. A contemporaneous example is the historic paucity of funding for firearms and their consequences, which is now changing in no small part because of pressure in academic public health, which increasingly makes it clear that gun violence is a public health issue. The same should be true of incarceration and health, and this special issue of AJPH is an important step in this regard.

Second, academic public health is entrusted with training the next generation of scholars and developing the public health workforce. Although public health curricula now broadly recognize a social determinants perspective, the pervasive influence of incarceration and the criminal justice system stands out from this framework. Academic public health is uniquely positioned to investigate this public health problem and equip students with the knowledge, tools, and analytic lenses to address it. For example, applying epidemiologic methods to examine the scale and impact of incarceration can expose its population health influences and angles for meaningful intervention. Considering historical developments in mental health and substance use disorder treatment can explicate the criminal justice intersection and sharpen the focus on healthbased alternatives. Highlighting the contribution of incarceration to health inequities can prepare the next generation of public health scholars for applying the knowledge and tools to interrupt the harmful cycle. Developing the capacity and perspective of students could strengthen a coordinated public health response, just as past cohorts have advanced the role of public health to improve labor practices and environmental protections. Certainly, the sheer scale and population specificity of US incarceration patterns warrant explicit attention from academic public health.

Third, academic public health aspires-or should aspire-to translate their knowledge and make their scholarship accessible to those who are producing change. As the United States reckons with the human costs and

consequences of incarceration, the public health articulation of this relationship should be emphasized. Civil rights advocates and scholars have amplified the issue to join the popular discourse, and some policymakers and providers are engaged in efforts to address it. In the health care sector, clinics are orienting to a broader, community-based perspective, which demands recognition and response for the health impact of incarceration in burdened communities. In the social service sector, focus on the economic, housing, and employment needs of criminal justice-involved populations reflects the critical role of the social determinants of health. And in the criminaljustice sector, some are pursuing reforms for the sustainable reduction of incarcerated populations. Work across these sectors is happening in governmental and community settings and through diverse coalitions. Academic public health can make an important contribution to these movements.

The wide-reaching impacts of incarceration are a distinct and critical challenge for population health in the United States, and academic public health is uniquely equipped to address it. This disciplinary perspective obliges us to invest in generating the scholarship, training the professionals, and translating the knowledge to shine a light on and to share what we learn. Academic public health ought to be playing a central role in the work to reduce incarceration and mitigate its consequences in the United States.

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Both authors contributed equally to this editorial.

CONFLICTS OF INTEREST

The authors declare no conflicts ofinterest in the development and production of this editorial.

Sidebar

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Exposure to Police and Client Violence Among Incarcerated Female Sex Workers in Baltimore City, Maryland

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ABSTRACT (ENGLISH)

Objectives. To determine the rate and correlates of incarceration among street-based female sex workers (FSWs). Methods. From April 2016 to January 2017, FSWs (n = 250) in Baltimore City, Maryland, were enrolled in a 12-month prospective cohort study. We analyzed baseline data and used zero-inflated negative binomial regression to model the incarceration rate. Results. Overall, 70% of FSWs had ever been incarcerated (mean = 15 times). In the multivariable analysis, incarceration rate was higher for FSWs exposed to police violence, non-Hispanic White FSWs, and women who used injection drugs daily. Risk for ever being incarcerated was higher for FSWs exposed to police or client violence, non-Hispanic Black FSWs, women who used injection or noninjection drugs daily, and those with longer time in sex work. Conclusions. Incarceration was associated with exposure to violence from both police and clients. Daily drug use and time in sex work appeared to amplify these risks. Although non-Hispanic Black women were at greater risk for ever being incarcerated, non-Hispanic White women were incarcerated more frequently. Public Health Implications. Decriminalization of sex work and drug use should be prioritized to reduce violence against FSWs. (Am J Public Health. 2020;110:S152-S159. doi:10.2105/AJPH.2019.305451)

FULL TEXT

Headnote

Objectives. To determine the rate and correlates of incarceration among street-based female sex workers (FSWs). Methods. From April 2016 to January 2017, FSWs (n = 250) in Baltimore City, Maryland, were enrolled in a 12-month prospective cohort study. We analyzed baseline data and used zero-inflated negative binomial regression to model the incarceration rate. Results. Overall, 70% of FSWs had ever been incarcerated (mean = 15 times). In the multivariable analysis, incarceration rate was higher for FSWs exposed to police violence, non-Hispanic White FSWs, and women who used injection drugs daily. Risk for ever being incarcerated was higher for FSWs exposed to police or client violence, non-Hispanic Black FSWs, women who used injection or noninjection drugs daily, and those with longer time in sex work. Conclusions. Incarceration was associated with exposure to violence from both police and clients. Daily drug use and time in sex work appeared to amplify these risks. Although non-Hispanic Black women were at greater risk for ever being incarcerated, non-Hispanic White women were incarcerated more frequently. Public Health Implications. Decriminalization of sex work and drug use should be prioritized to reduce violence against FSWs. (Am J Public Health. 2020;110:S152-S159. doi:10.2105/AJPH.2019.305451)

Women are the fastest growing population in the US prison system1 attributable largely to punitive approaches to regulating nonviolent behaviors perceived as deviations from societal and moral values, such as drug use and sex work.2 Experiences of street-based female sex workers (FSWs) are salient for understanding the impact of mass incarceration on women because sex work- related arrests are the only criminal offense category for which women are disproportionately incarcerated compared with men.3

FSWs are exposed to myriad structural, interpersonal, and individual risk factors that contribute to incarceration and

violence victimization.4,5 Existing studies have demonstrated that FSWs who have more interactions with police are more likely to experience assault, harassment, and incarceration.5 10 For example, in our previous analysis with 250 FSWs in Baltimore, Maryland, 78% reported at least 1 abusive police encounter, such as damage ofpersonal property, forced sex, or intimidation.6 FSWs targeted by police are often coerced into providing sexual favors or bribes in exchange for no arrest, but many are arrested nonetheless after such encounters.8,11-13

To avoid police, FSWs sometimes rush negotiations with clients or move to unfamiliar places with less police presence to work.8,14 These police avoidance tactics disrupt FSWs work environments14,15 and limit their ability to effectively screen clients and be familiar with their work surroundings, resulting in greater likelihood of violence and theft.16 In addition, widespread and often illegal policing practices such as using condoms as evidence of sex work11 may influence FSWs to avoid carrying condoms and, in turn, engage in condomless sex, which increases their risk for HIV and other sexually transmitted infections (STIs).8,17,18

Drug use among FSWs can amplify risks of violence and incarceration.14 In the context of dual criminalization of sex work and drug use, FSWs who also use drugs are more likely to have police encounters and to be arrested.5,12 Because of the harmful effects of aggressive policing practices, FSWs sometimes use drugs as a coping mechanism to deal with the violence and stigmatization they face.19,20HIV andSTI risks for FSWs who use drugs are potentiated by unsafe drug and sex work practices, such as sharing needles and exchanging sexual services while intoxicated.14,18 In some instances, FSWs who use drugs are also excluded from working in indoor venues, which forces them to work on the streets in unsafe environments that expose them to more police encounters.5,12 As a result, dual criminalization of sex work and drug use exacerbates disparities among FSWs, an already severely marginalized population.14'20

For the current study, we used baseline data from a cohort of street-based FSWs in Baltimore City, Maryland, to examine the association between violence and incarceration, adjusting for other drivers of arrest including demographic characteristics, illicit sex work and drug use behaviors, and mental health. We hypothesized that incarceration among FSWs would be associated with exposure to violence and that higher rates of incarceration would be correlated with more egregious forms of violence (e.g., physical or sexual violence vs verbal harassment) from both police and clients.

METHODS

A prospective FSW cohort was recruited between April 2016 to January 2017 to participate in the Sex Workers and Police Promoting Health in Risky Environments (SAPPHIRE) study. SAPPHIRE study methods have been previously described in

detail.6,21,22

Data Collection

Participants were recruited through targeted sampling in 14 locations across Baltimore with street-based sex work activity.21 Inclusion criteria were (1) age 15 years or older; (2) sold or traded oral, vaginal, or anal sex "for money or things like food, drugs, or favors"; (3) picked up clients on the street or in public places 3 or more times in the past 3 months; and (4) willing to undergo HIV and STI testing. Individuals who identified as male were not eligible to participate. Participants provided informed consent and completed HIV and STI testing and an interviewer-administered computer-assisted personal interview survey to gather data on demographic characteristics, sex work and drug use behaviors, exposure to violence, and criminal justice system involvement. Followup surveys and testing were conducted at 4 additional visits (3, 6, 9, and 12 months).22

Measures

Incarceration measures. All participants were asked if they had ever been arrested (yes = 1; no = 0) and ever incarcerated (yes = 1; 0 = no) in their lifetime. Incarceration was defined as "being locked up in jail, prison, or a correctional facility for more than three days" (yes = 1; no = 0). If ever incarcerated, participants were asked how many times, the longest time incarcerated, and amount of time since last release in months. Ever-incarcerated FSWs were asked the reasons for incarceration among arrest types grouped into 4 mutually exclusive categories: (1) sex work-related arrests only, (2) drug-related arrests only, (3) both sex work- and drug-related arrests, or (4)

neither sex work- nor drug-related arrests. Sex work-related arrests included solicitation or prostitution, indecent exposure, sodomy or perversion, disorderly conduct, loitering, or trespassing. Drug-related arrests included possession for personal use; possession with intent to distribute, deal, or traffic; and possession of drug paraphernalia. Arrests unrelated to sex work or drugs included assault, battery, burglary, no reason given by officer, or other. The dependent variable for this analysis was the number of times incarcerated modeled as a count ranging from 0 to 150 times.

Violence measures. Participants were asked about lifetime exposure to physical and sexual violence from intimate partners, clients, pimps or managers, and police, as well as violence at different life stages (not perpetrator-specific), such as child abuse and forced sex as an adult.6 Participants were also queried about a range of"egregious police behaviors" in the past 12 months defined as abusive interactions outside the scope of legal enforcement practices, such as harassment, sexual assault' damage of personal property, physical violence, or coerced sex in exchange for no arrest. These egregious police behaviors were reduced into 3 variables: (1) police physical or sexual violence; (2) police verbal harassment, bullying, or intimidation; and (3) police damage of personal property. Finally, participants were asked ifthey had ever had sex with police out of fear to avoid arrest when the police officer was not a paying client in the past 3 months. Each violence question was answered yes = 1 or no = 0.

Demographic, behavioral, and health measures. We collected information on demographic characteristics including age, gender, race, ethnicity, education, financial instability (no legal part-time or full-time employment, past 3 months), housing instability (homeless, past 3 months), and food insecurity (going to sleep at night hungry because there was not enough food more than once per week, past 3 months).

We also collected information about lifetime and recent (past 3 months) sex work and drug risk behaviors. Sex work variables included age of entry into sex work; time in sex work; main reasons for sex work initially and currently; ever having a pimp or manager; ever forced, coerced, or misled in sex work; sex with clients in public; condomless vaginal or anal sex; any police clients; and police avoidance tactics, such as rushing negotiations with clients, moving to an unfamiliar place to work, or not carrying condoms. Drug variables included any recent use (past 3 months), daily use ofinjection drugs (heroin, speedball, or cocaine), daily use of noninjection drugs (smoking or snorting heroin, smoking crack cocaine, or sniffing or snorting powder cocaine), and any lifetime participation and completion of drug treatment or diversion programs. Finally, we asked about lifetime mental health diagnoses for major depressive disorder, bipolar disorder, anxiety, phobia, obsessive-compulsive disorder, and posttraumatic stress disorder. We included these demographic, behavioral, and health characteristics as controls to test for alternative explanations for incarceration.

Statistical Analysis

Descriptive characteristics. We calculated univariate frequencies and proportions for sample characteristics overall and stratified by incarceration history. We used the Pearson %2 test to examine significant differences between the proportion of FSWs ever versus never incarcerated by demographic characteristics, sex work and drug use behaviors, mental health, and exposure to violence. Significant differences were determined by a $P < .05$.

Bivariate regression. We used bivariate zero-inflated negative binomial (ZINB) regression to model the incarceration rate. ZINB regression iteratively generates (1) a binary logit model to predict certain zeros "not at risk" for incarceration and (2) a negative binomial model to predict counts for number of incarcerations among those who are not certain zeros. The 2 portions of the model are then combined to distinguish the underlying processes that predict membership in the not-at-risk group (yes or no) versus the incarceration rate (count). Individuals who are certain zeros are considered not at risk for incarceration because they do not have the necessary conditions for incarceration (e.g., FSWs who were never arrested) and thus would always have a zero for the number of incarcerations. Individuals who are not certain zeros are considered at risk because they have the necessary conditions for incarceration and could have either a zero or positive count for number of incarcerations.

We used this ZINB modeling procedure to identify distinct risk profiles for incarceration, such as 1 group with no or limited police contact and another group with frequent police interactions and arrests. ZINB regression was also statistically justified because of excess zeros and overdispersion. We identified excess zeros by plotting the

individual fitted probabilities ofthe observed data under the zero-inflated and noninflated models against each other. As a sensitivity analysis, a significant Vuong test indicated that ZINB was preferable to standard negative binomial regression because certain zeros could be modeled independently from count values. We determined overdispersion by a likelihood ratio test with a dispersion coefficient (a) significantly different from zero indicating superiority over zero-inflated Poisson regression. Ordinary least squares regression was not appropriate, as the Shapiro- Wilk test demonstrated the nonnormality of the count data.

Multivariable regression. We included covariates in the multivariable ZINB model based on a set of a priori hypotheses and areas of interest from existing literature that had a P <.15 in bivariate tests of significant differences. Because incarceration rates are dependent on time, we included age as the exposure variable constrained to 1.00 to determine the person-time at risk for incarceration, and we included time in sex work as a covariate in both the logit and negative binomial portions of the model. We determined the best-fitting model with the Bayesian information criterion. Exponentiated coefficients for the negative binomial portion of the model are reported as adjusted incidence rate ratios (IRRs) and for the logit portion as adjusted odds ratios (AORs). The most parsimonious model is discussed in the Results. We conducted all analyses in Stata/ SE version 15 (StataCorp LP, College Station, TX).

RESULTS

In Baltimore City, we recruited 250 FSWs who had a mean age of 36 years. Approximately 66% were non-Hispanic White and 23% were non-Hispanic Black. The majority had no high-school degree (52%) and were legally unemployed (92%), homeless (62%), and food insecure (54%) in the past 3 months. Drug use was nearly universal-99% reported any drug use in the past 3 months-with the majority reporting daily heroin injection use (82%) or smoking crack cocaine (62%).

Sample Characteristics by Incarceration History

Overall sample characteristics across a wide range ofstudy variables are reported in Footer et al.6 and Sherman et al.22 There were numerous significant differences between everversus never-incarcerated FSWs (Table 1).

Demographics. Ever-incarcerated FSWs were significantly older (mean age of 37 vs 34 years; P = .03). A higher proportion of everversus never-incarcerated FSWs did not complete high school (57% vs 43%; P = .04) and were legally unemployed (95% vs 85%; P = .01). There were no significant bivariate differences by race, housing instability, food insecurity, or mental health status.

Sex work history. Ever- versus neverincarcerated FSWs reported significantly longer time in sex work (mean of 13 vs 7 years; P <.01). A higher proportion of ever- versus never-incarcerated FSWs reported starting sex work to get drugs (78% vs 61%; P = .01) and all of the following police avoidance tactics in the past 12 months: rushed negotiations with clients (59% vs 45%; P = .05), moved to an unfamiliar place to work (26% vs 13%; P = .03), and avoided carrying condoms (18% vs 5%; P = .01). There were no significant differences in starting sex work as a minor; ever having a pimp or manager; being forced, coerced, or misled in sex work; doing sex work for drugs currently; or condomless sex with clients.

Drug use history. The proportion who reported any daily injection drug use was marginally but not significantly higher for ever- versus never-incarcerated FSWs (62% vs 49%; P = .06). Higher proportions of everversus never-incarcerated FSWs reported daily heroin injection use (87% vs 72%; P = .01), any daily noninjection drug use (79% vs 63%; P = .01), daily crack cocaine smoking (67% vs 49%; P = .01), any drug treatment history (83% vs 64%; P< .01), and any diversion program history (34% vs 11%; P< .01). However, there were no differences in the proportions who ever completed any treatment or diversion programs. Approximately half of those who had ever been in drug treatment and a third in diversion never completed a program, regardless of the number of times in treatment or diversion.

Exposure to violence. Table 2 displays the distribution of violence exposures and incarceration history. Higher proportions of ever- versus never-incarcerated FSWs reported forced sex as an adult (46% vs 21%; P< .01), client physical or sexual violence (65% vs 39%; P< .01), police physical or sexual violence (32% vs 11%; P< .01), sex with police when the officer was not paying (22% vs 9%; P = .04), police verbal harassment (61% vs 31%; P< .01), and personal property damaged by police (26% vs 13%; P = .02). There were no significant differences in child abuse or

intimate partner violence.

Incarceration history. Overall, 82% of FSWs had ever been arrested, and 70% had ever been incarcerated for more than 3 days, with a mean of 15 incarcerations each. All everincarcerated FSWs versus 41% of neverincarcerated FSWs had ever been arrested (P< .01). All except 6 ever-incarcerated FSWs were detained multiple times. Sex work- or drug-related arrests were involved in the majority of incarcerations (76%). One in 3 ever-incarcerated FSWs (37%) spent more than 1 year locked up during longest incarceration. The majority ofever-incarcerated FSWs (58%) were released from their most recent incarceration more than a year before the interview.

Multivariable Correlates of Incarceration

Incarceration rate. Table 3 displays the results ofthe count model for incarceration rate and the logit model for predicting certain zeros "not at risk" for incarceration. FSWs associated with higher risk of ever being incarcerated (i.e., not being a certain zero). Furthermore, incarceration rate was strongly correlated with police violence. These findings complement our previous analysis on police-related correlates of clientperpetrated violence.6 Policies to reduce incarceration among FSWs should include legal recourse and protections for those who report violence perpetrated by both police and clients. For example, a new law coauthored by sex workers and legislators in California, SB 233, provides sex workers with immunity from arrest when reporting violence and outlaws the widespread practice of using condoms as evidence for sex work-related arrests.24

We found that ever-incarcerated FSWs in the sample engaged in several police avoidance behaviors, which likely increased their vulnerability to violence and incarceration.25,26 For example, many FSWs reported rushing client negotiations, not carrying condoms, and working in unfamiliar places to avoid police, all of which decrease their safety and control over the work environment. FSWs in criminalized environments often engage in these behaviors in an attempt to stay safe, but these tactics likely exacerbate cycles of violence and incarceration.11

Our findings on rushed negotiations contribute to a growing body ofinternational evidence on the potential detrimental effects of so-called "end demand" or "client criminalization" antitrafficking policies. Studies conducted in countries in which new client criminalization laws were recently implemented, such as Canada and France, suggest that violence against FSWs increases when clients also feel more pressure to rush negotiations, thwart screening, and evade police.27 Furthermore, in our study, we found that many FSWs had police clients, and 1 in 4 were the victim of physical or sexual violence perpetrated by police. As such, "end demand" client criminalization laws are not likely to reduce violence committed by police, one ofthe most common forms of abuse experienced by sex workers.28

In examining racial differences, we found that White women in the sample were at lower risk of ever being incarcerated (i.e., more likely to be certain zeros) than Black women. However, White women were incarcerated more frequently than Black women, contrary to known trends in racial profiling.29 These seemingly paradoxical findings suggest that the sample might have included 2 distinct subgroups of White FSWs: (1) women who used drugs daily and were incarcerated frequently and (2) women who did not use drugs frequently, had little or no police contact, and were never incarcerated. By contrast, almost all Black women in the sample were ever arrested, but their rates of incarceration were not as high as White women's. The elevated incarceration rate among White women in the sample was likely attributable to disparities in frequency of drug use.6,19,20 Indeed, the proportion ofWhite women in the sample reporting daily drug use, particularly injection drug use, was significantly higher than among Black women.6 These findings are in line with national incarceration data indicating a narrowing gap between the proportions of incarcerated Blacks and Whites coinciding with a rise in opioid-related arrests.29

Our results also demonstrated that FSWs who reported both daily injection and noninjection drug use were at higher risk of ever being incarcerated, and those who reported daily injection drug use were incarcerated more frequently. These findings highlight the need to address frequent drug use within interventions targeting street-based FSWs.9,12,30 Previous studies have shown strong links between violence and injection drug use among street-based FSWs and that frequent drug use and addiction lead to more police encounters.9,14 More than 80% in our sample reported drugs as the primary reason for engaging in sex work currently. Furthermore, we observed a substantial increase in the proportion ofnever-incarcerated FSWs who reported drugs as the main initial reason for

sex work compared with the main current reason from 61% to 83%. As such, we expect that the arrest trajectories of never- and ever-incarcerated FSWs will likely converge with time.30,31 This is especially concerning in light of our findings that FSWs in the sample were incarcerated a mean of 15 times, and a third were detained for more than a year during longest incarceration.32

Limitations

These study findings are subject to limitations. First, the racial composition of the sample was not representative of the general population in Baltimore, which is 63% Black, compared with our sample in which only 23% were Black.33 However, we were not attempting to represent the broader population of Baltimore but, rather, the population of FSWs most likely to encounter police.21 Because our sample included only street-based FSWs, it is possible our recruitment strategies did not reach some Black FSWs who stay off the streets to avoid police and instead work in venues such as exotic dance clubs.34 Second, comparisons in incarceration rates between street-based versus indoor venue-based sex workers were beyond the scope of this study. Third, considering the sensitive subject matter and interview design, participants might have underreported stigmatized and criminalized behaviors. It is also possible that participants might have had difficulty or recall bias disentangling their experiences to fit into specific violence categories we created. Finally, the data for this analysis were cross-sectional, limiting our ability to draw causal inferences.

Despite these limitations, the findings provide a crucial addition to literature on the harmful impacts of criminalization on FSWs and complement our previous analysis of police-related correlates of client-perpetrated violence, in which we found that frequent abusive police encounters contribute to an environment in which client violence is commonly experienced.6 The current analysis is one of few on the relationship between violence and incarceration rates among FSWs globally, and the first to our knowledge in a US cohort of FSWs recruited through targeted population-based sampling.6,21 Our findings indicate that decriminalization ofsex work and drug use could have far-reaching positive impacts on the lives of FSWs.35

Public Health Implications

The dual criminalization of sex work and drug use contributes to a revolving door of violence and incarceration, especially among street-based FSWs who use injection drugs daily.5,8 Public health approaches to reduce violence against FSWs should reject carceral frameworks that allow police and clients to commit pervasive acts of violence with impunity.5,6 Our findings support calls for full decriminalization ofsex work and drug use to foreground the rights of sex workers and provide them with the same legal protections afforded to workers in other industries.6,7 Â1PU

CONTRIBUTORS

A. E. Fehrenbacher developed and conducted the data analysis plan and wrote the original and revised draft of the article. J. N. Park provided analytic and data management support. K. H. A. Footer provided content expertise on study measures. S. T. Allen provided content expertise on study recruitment and targeted sampling. J. N. Park, K.H.A. Footer, B.E. Silberzahn, S.T. Allen, and S. G. Sherman provided content expertise and feedback on the analysis, interpretation, and drafting of the article. S.G. Sherman conceptualized the study. All contributors provided final approval for the article.

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CONFLICTS OF INTEREST

S.G. Sherman is an expert witness for the plaintiffs in opioid litigation.

HUMAN PARTICIPANT PROTECTION

The study was approved by the Johns Hopkins Bloomberg School ofPublic Health institutional review board and holds a Certificate of Confidentiality.

Sidebar

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Addressing Mass Incarceration to Achieve Health Equity

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ABSTRACT (ENGLISH)

In 2018, the Robert Wood Johnson Foundation added a measure of incarceration to the 35 national-level measures we are using to track the nation's progress toward the vision of a culture of health. We made this change for two reasons.

First, there is a well-established and growing body of research on the intersection of health and incarceration. In addition, advocates of justice reform have recently argued for making jails and prisons more transparent, questioning the quality of health care within those facilities and the access incarcerated people have to needed services. Around the same time that we decided to include incarceration in our culture of health measures, we were approached by the guest editors of this supplement of AJPH. We saw this supplement as an exciting opportunity to show how efforts to influence the US system of mass incarceration illuminate the four action areas of a culture of health: making health a shared value; fostering crosssector collaboration; creating healthier, more equitable communities; and strengthening the integration of health services and systems. The supplement also highlights promotion of wellbeing as a national priority and the critical importance of a health equity focus in our work.

FULL TEXT

In 2018, the Robert Wood Johnson Foundation added a measure of incarceration to the 35 national-level measures we are using to track the nation's progress toward the vision of a culture of health. We made this change for two reasons.

First, there is a well-established and growing body of research on the intersection of health and incarceration. In addition, advocates of justice reform have recently argued for making jails and prisons more transparent, questioning the quality of health care within those facilities and the access incarcerated people have to needed services. Their demands have opened up a new frontier of research and programming that will likely shine an increasingly critical spotlight on the country's problem of mass incarceration. Second, incarceration is an issue that has origins and effects across many systems, and it has a detrimental impact well beyond those individuals who are incarcerated. As a result, it requires the kind of integrated, systems-level thinking and cross-sector collaboration that is at the heart of our vision for a culture of health.

Around the same time that we decided to include incarceration in our culture of health measures, we were approached by the guest editors of this supplement of AJPH. We saw this supplement as an exciting opportunity to show how efforts to influence the US system of mass incarceration illuminate the four action areas of a culture of health: making health a shared value; fostering crosssector collaboration; creating healthier, more equitable communities; and strengthening the integration of health services and systems. The supplement also highlights promotion of wellbeing as a national priority and the critical importance of a health equity focus in our work.

A key component in creating a culture of health is getting people to think differently about health-specifically, to see more clearly how health is related to a host of social issues, including incarceration. As illuminated in the set of articles in this supplement, the nation's incarceration problem is a health problem, not simply one ofcrime and the justice system. We know that health practitioners do not always think their patients' histories with the justice system are relevant to their health, but research shows that rates of communicable diseases, chronic health conditions, and psychiatric and substance use disorders are significantly higher among individuals who have been incarcerated than among those who have not been incarcerated.

A widened lens for understanding social problems also fosters a need for wider cooperation across sectors, as this collection highlights well. And because people who have been incarcerated are more likely to have histories of social marginalization- including poverty, unemployment, and a lack of educational attainment -the problem requires a holistic approach to solutions, one in which community developers, workforce development agencies, schools, employers, financial institutions, and, of course, the health care field work together. The process of formulating connections across such diverse sectors and taking the next steps toward action is at the heart ofbuilding a culture ofhealth.

In showing the ways incarceration affects so many different areas of American life, this supplement of AJPH can broaden our understanding of how incarceration negatively influences possibilities for hope, happiness, sense of security, and agency as well as other critical components of community well-being. We believe that policy decisions are improved when collective wellbeing is a national priority. For example, the practices and policies that have largely driven this era of mass incarceration- among them the War on Drugs and the Anti-Drug Abuse Act of the 1980s, the three-strikes provision of the 1990s, and New York City's "stop and frisk" strategy-may have been viewed differently at the time if wellbeing was an elevated priority in our country. Our goal is to ensure that in the future our leaders can better identify the practices and policies likely to cause harm and those most likely to promote health for all.

Finally, we supported this supplement because mass incarceration is the most pressing civil rights issue of today. Our central aim at the Robert Wood Johnson Foundation is the achievement of health equity, and we know we can't reach that goal unless, as a nation, we address mass incarceration. Black and brown people make up 60% of the incarcerated population in America, largely as a result of unequal targeting ofpractices and policies such as those described here, especially in poorer communities. The underlying problem of racism in America also perpetuates the disparities we see in health across the board. We hope this supplement of AJPH not only illuminates our culture of health vision through the lens of one of our key outcome measures but also engages new partners and catalyzes overdue discussion-and action-on race and equity in our country. ÂfPH

CONTRIBUTORS

Both authors contributed equally to the writing of this editorial.

CONFLICTS OF INTEREST

The authors declare no conflicts ofinterest.

Sidebar

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Public Health Addresses Police Violence: A Beginning

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ABSTRACT (ENGLISH)

From Enforcers to Guardians: A Public Health Primer on Ending Police Violence By Hannah L. F. Cooper, ScD, and Mindy Thompson Fullilove, MD Baltimore, MD: Johns Hopkins University Press; 2020 280 pages; $34.95 ISBN: 9781421436449

FULL TEXT

Public Health Addresses Police Violence: A Beginning

From Enforcers to Guardians: A Public Health Primer on Ending Police Violence By Hannah L. F. Cooper, ScD, and Mindy Thompson Fullilove, MD Baltimore, MD: Johns Hopkins University Press; 2020 280 pages; $34.95 ISBN: 9781421436449

Following public outcry at the deaths of Black men related to police encounters, the litany of names-Michael Brown, Philando Castile, Eric Garner, Freddie Gray, Tamir Rice, and others-came to reflect the human cost of excessive police force. Most ofthese men were young; some were boys. All were too young to die. These deaths propelled the Movement for Black Lives, fueled ongoing outrage, and motivated the authors to write this book.

Written as a primer for several audiences, including students, public health departments, and researchers, From Enforcers to Guardians represents a brave, scholarly response to the silence of the public health and medical community on organized state violence. In November 2018, the American Public Health Association took the pioneering step, unique among professional organizations, of updating its 1998 policy "Addressing Law Enforcement Violence as a Public Health Issue" to name racism. But much remains to be done. By placing police violence among the social determinants of health, Hannah L. F. Cooper, ScD, and Mindy Thompson Fullilove, MD, pose a challenge to examine it as a driver of racial health inequities and part of everyday life.

BROAD SCOPE, UNEXPECTED HISTORIES

After an overview that includes the concept ofa "toxic triad" (i.e., marginalization, distorted policing, and violence), From Enforcers to Guardians proceeds in three sections. A historical timeline begins with the Norman invasion ofEngland (1066) and ends in 2015 with the report of the Obama era President's Task Force on 21st Century Policing.1 Readers may be surprised to begin an exploration of US police violence more than 950 years ago in Ireland, England's first colony. Many years of Irish resistance led to an occupying British army and the formation of the Royal Irish Constabulary, the foundational example ofwhat the authors call "distorted policing." Most scholars, the authors acknowledge, trace repressive, armed policing to slave patrols, the first US policing activity.

MEAGER DATA AND NEW SOURCES

Turning to data, the authors highlight that even though violence was framed as a public health issue 40 years ago,2 few studies examined police violence. In fact, the authors note 2004 as the year that the first article on police violence appeared in a public health journal.3 I might quibble with this date-an article on underreporting of policerelated homicides appeared in the same journal in 2003.4 Nonetheless, this silence on police violence is more

than curious. True, as explained, public health leadership has been "historically White and affluent and thus not personally targeted [by police]." But researchers who are White and not poor study poverty and racism. And researchers who are people of color apply their skills to these topics. That research on gun violence in general remains controversial surely has not encouraged research addressing police actions. Furthermore, there is resistance in the field to reckoning with structural drivers, such as state violence, neoliberalism, and the legacies ofpast and ongoing racial oppression. Finally, behavioral explanations generally focus on racial minorities and the poor. Happily, recent research has begun to address this lacuna. An example is the call by Krieger et al.5 to make deaths from legal intervention subject to public health surveillance. A still modest but growing literature gives hope.

The remainder of the second section focuses on US Department of Justice "pattern and practice" investigations, bringing attention to work with which the medical and public health community likely has little acquaintance. Detailed case studies identify policing that violated constitutional rights.6 Adverse findings can lead to mandated US Department of Justice oversight of carceral institutions, which continues until an independent monitor determines that deficiencies are resolved. The current administration has more or less ceased this approach.

FRAMING THE PATH TO CHANGE

Throughout the book, the authors aim to craft and apply a framework that guides analysis of policing with the goal to change it. They identify a "toxic triad" of distorted policing, marginalization, and violence to be dismantled. To accomplish this, they find no magic bullet but believe that a magic strategy will work. The authors glean from schistosomiasis control an example of an ecological magic strategy. This unexpected analogy refers to the need for multiple interventions at different ecological levels (e.g., individual, environmental). Applied to policing, six goals emerge, with examples to amplify each: (1) end marginality, (2) change the narrative, (3) enforce just laws, (4) heal trauma, (5) activate public health, and (6) support the precincts. The book ends with cheerful imaginings (sketches included) of police precincts as community hubs, with restaurants, retail outlets, parks, and so forth.

OPENING A DISCUSSION

The authors' ambitious scope makes it hard to ask for more. However, by beginning the book with the global roots of violent policing, contemporary US practices in the international context receive scant attention. Although its very long timeline notes resistance of the enslaved and their descendants-most recently, #BlackLivesMatter-the 1960s Black Power movement (often seen as its most direct antecedent) does not appear. The Black Panther Party began as a challenge to violent policing practices in Black communities. This defiance led to a massive Federal Bureau of Investigation response and nearly 20 deaths of party members, mostly during police raids.7

The strength of this book lies as much in the questions it asks as in the answers it offers. Here is a central question: When the state represents "apartheid capitalism" (the authors' words), can a police force fulfill its role of protecting both the state and its residents? Reimagined police precincts may sound appealing but left unexplored is whether a further extension of policing into everyday life is desirable or might have unintended consequences. This tension may explain the obscureness of certain language. The author's more detailed description of the book's title extends it to From Enforcers of Inequality to Guardians of Us All. But stripped to yield From Enforcers to Guardians, I wonder at its meaning. Certainly, heavily militarized police officers authorized to enforce oppressive criminal laws become more an occupying force than stewards of safety. But enforcement is not inherently bad. The law can protect against state violence. Not all guardianship (i.e., being guarded) connotes protection. Why "distorted policing" and not just "discriminatory policing"? Why "marginalized people" outside of "protected circles" and not simply "race, class, or gender oppression"? And why "magic strategies" and not "social mobilization," which, after all, is the key driver of change?

Do we need kinder, gentler policing or a shift in power, with reduced dominance of the police response to societal issues arguably better addressed by public health, social service, and communities themselves? A public health response does not ensure such a shift in leadership. New York City's admirably vigorous approach to its overdose crisis had a budget allocation similar to that seen across the nation. The New York City Department ofHealth received 20% of new funding, the remainder going to the police department. Certainly, the United States is an international outlier in its use of police violence. But in the far less lethal United Kingdom, kinder policing still induces

unfair profiling of its minority and poor populations. Ending excess deaths is critical, but justice demands more. The authors do not fully grapple with the tension between reforming and rethinking and dismantling police presence. Many public health readers of From Enforcers to Guardians will come away with the centrality of better data to improve transparency and accountability. This book meets a critical need that sets public health on a path to fewer lives cut short, the goal of our field. It also creates room for additional conversations to address what is still missing. That is why it is such an important book. ÂfPU

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Sidebar

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The Bard Prison Initiative: Education, Incarceration, and Public Health

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ABSTRACT (ENGLISH)

A vast body of research has demonstrated that mass incarceration has and continues to be a significant driver of health inequalities in the United States. The dramatic overrepresentation of African American men in jails and prisons is a stark reminder of the persistent inequities in education, housing, employment, and access to health care of the communities from which they were taken.1 The deprivation of educational opportunities is perhaps the most significant of the risks of incarceration, with approximately 68% of the incarcerated persons in state prisons in the United States without a high school diploma.2 Barriers to high school completion include the so-called school-to-prison pipeline, which is defined as the collection of local and national policies and practices that increase the odds that students will be involved in the criminal justice system as juveniles and later in life as adults.3 The overrepresentation of students of color in this pipeline suggests that one of the most important determinants of mass incarceration -education-is also the key to the development of significant solutions. The relationship between educational opportunity and systems of incarceration is powerful. As noted in 2016 in a brief from the US Department of Education, since the 1990s, government expenditures for prisons and jails at the state level have increased three times as fast as spending on education at the elementary and secondary level. Moreover, it is reported that young black men between the ages of 20 and 24 who do not have a high school diploma (or an equivalent credential) have a greater chance of being incarcerated than of being employed. Efforts to increase high school completion rates alone have the potential to substantially reduce arrest rates in affected communities.

FULL TEXT

A vast body of research has demonstrated that mass incarceration has and continues to be a significant driver of health inequalities in the United States. The dramatic overrepresentation of African American men in jails and prisons is a stark reminder of the persistent inequities in education, housing, employment, and access to health care of the communities from which they were taken.1 The deprivation of educational opportunities is perhaps the most significant of the risks of incarceration, with approximately 68% of the incarcerated persons in state prisons in the United States without a high school diploma.2 Barriers to high school completion include the so-called school-to-prison pipeline, which is defined as the collection of local and national policies and practices that increase the odds that students will be involved in the criminal justice system as juveniles and later in life as adults.3 The overrepresentation of students of color in this pipeline suggests that one of the most important determinants of mass incarceration -education-is also the key to the development of significant solutions.

The relationship between educational opportunity and systems of incarceration is powerful. As noted in 2016 in a brief from the US Department of Education, since the 1990s, government expenditures for prisons and jails at the state level have increased three times as fast as spending on education at the elementary and secondary level. Moreover, it is reported that young black men between the ages of 20 and 24 who do not have a high school diploma (or an equivalent credential) have a greater chance of being incarcerated than of being employed. Efforts to increase high school completion rates alone have the potential to substantially reduce arrest rates in affected communities.4(p1)

BARD PRISON INITIATIVE

We write here as alumni and as educators representing the Bard Prison Initiative (BPI), a program founded by Bard College in 1999 that, at this writing, has provided college degrees to more than 500 incarcerated persons in six correctional facilities in the state of New York.5 We also represent the students and faculty engaged with public health courses within this program. Two of us (A. C., R. G.) completed a masters degree in epidemiology at Columbia Universitys Mailman School of Public Health and are currently employed by the New York City

Department ofHealth and Mental Hygiene. One coauthor (H. M.) is completing a masters degree in health administration at Mailman, and another (R. E. F.) has been teaching undergraduate public health courses in the BPI system since 2010.

Our work stands in stark contrast to the spirit that animated the creation ofthe Violent Crime Control and Law Enforcement Act of 1994, which denied financial aid in the form of Pell Grants to all incarcerated persons. The debate that preceded the passage of the act was steeped in racist rhetoric that portrayed a system ofUS jails and prisons housing a population of persons of color who were being pampered and given unearned educational privileges with the hard-earned tax dollars of upright, law-abiding citizens. The loss of educational opportunities in prison only exacerbates the challenges of finding gainful employment upon release, as opportunities for the unskilled worker diminish with each passing year.1,6 The success of the BPI in financing college course work for incarcerated persons is therefore all the more significant.

The success of this program in creating college graduates committed to pursuing careers in public health cannot be underestimated. For many of us, public health research contributed substantially to our understanding of how the health of the communities to which we returned was significantly influenced by the loss of so many men and women to prison. Our mission upon our return home has been to maximize the ability of health care systems to invest and engage in the reform of the inequities produced by systems of incarceration and, in so doing, to increase access to resources that promote health and prevent disease.

Moreover, it is our considered opinion that expanding educational opportunities for currently and formerly incarcerated people within the communities where they live-or to which they will return-is an essential component ofending mass incarceration and of promoting public health. We are among dozens of BPI graduates who are working in New York City to engage young men and women involved in justice to avoid the depredations of prison life. We are credible messengers who have, in the language of our young people, been there and done that. Our lives and experiences upon returning home and earning graduate degrees have given us the right to claim that there are, indeed, alternatives to "doing time," and that these are alternatives that can strengthen, not destroy, our communities.

WHAT DOES RECIDIVISM MEASURE?

The low rates of recidivism among BPI graduates-fewer than 4% have returned to prison -are often advanced as powerful arguments in support of college in prison. Though clearly an important measure of success, recidivism rates fall short as a meaningful gauge of the power of education to address the evils of mass incarceration. Recidivism rates are a blunt measure of failure that cannot fully account for the qualitative, contextual issues facing persons reentering society. Returning to a community that is heavily policed, has highlevels of crime, and is impoverished is, in too many instances, the foundation upon which the returning citizen must rebuild his or her life. Further, the lack of education renders the returning person uncompetitive in most areas of the job market and adds to the disorientation of adjusting to the sea shift of living "on the outside." And with few services to ease the transition to normal life, recidivism is less an individual's failure to reform and more the contextual, structural recipe for failure.

The triumph of BPI has been in rejecting the entrenched and Draconian way in which incarceration is viewed: prison is not an irrevocable point of failure, but a starting point. Education is not offered to overcome an individual's shortcoming, but as an effort to combat social structures with origins that go back to the incorporation of slavery in three articles of the US Constitution.7 The prison classroom is not a human warehouse, but a space to educate and acculturate. And the results are evident in the outcomes: BPI students attend and have graduated from, among others, the City University of New York (CUNY), Columbia University's Mailman School of Public Health, and other institutions of higher education.

PUBLIC HEALTH TRAINING

Schools of public health are uniquely positioned to contribute to efforts that BPI and other similar college programs have created. Public health training "behind the walls" can create a public health workforce composed of directly affected persons who can be empowered to serve as change agents, capable of bringing accountability to public

health systems and able to combat the encroachment of carceral systems on the systems of education that have failed so many in their communities. We are the living proofs ofconcept, and ours is an example that we believe is uniquely worthy of being emulated by colleges, universities, and graduate programs nationwide. As is often repeated in classrooms behind the walls, "Ifnot us, who? And if not now, when?" ÂfPU

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CONFLICTS OF INTEREST

The authors report no conflicts ofinterest.

Sidebar

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DETAILS

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County Jail Incarceration Rates and County Mortality Rates in the United States, 1987–2016

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ABSTRACT (ENGLISH)

Objectives. To evaluate the relationship between changes in county jail incarceration rates and subsequent county mortality rates across the United States. Methods. We analyzed county jail incarceration rates from the Bureau of Justice Statistics from 1987 to 2016 for 1884 counties and mortality rates from the National Vital Statistics System. We fit 1-year-lagged quasi-Poisson 2-way fixed-effects models, controlling for unmeasured stable county characteristics, and measured time-varying confounders, including county poverty and crime rates. Results. A within-county increase in jail incarceration rates from the first to second quartile was associated with a 2.5% increase in mortality rates, adjusting for confounders (risk ratio [RR] = 1.03; 95% confidence interval [CI] = 1.02,1.03).This association followed a dose-response relationship and was stronger for mortality among those aged 15 to 34 years (RR = 1.07; 95% CI = 1.06, 1.09). Conclusions. Within-county increases in jail incarceration rates are associated with increases in subsequent mortality rates after adjusting for important confounders. Public Health Implications. Our findings add to the growing body of empirical evidence of the harms of mass incarceration. The criminal justice reform and decarceration movements can use these findings as they develop strategies to end mass incarceration. (Am J Public Health. 2020;110:S109-S115. doi:10.2105/AJPH.2019.305413)

FULL TEXT

Headnote

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Public Health Implications. Our findings add to the growing body of empirical evidence of the harms of mass incarceration. The criminal justice reform and decarceration movements can use these findings as they develop strategies to end mass incarceration. (Am J Public Health. 2020;110:S109-S115. doi:10.2105/AJPH.2019.305413)

Mass incarceration is hypothesized to have collateral health consequences not only for incarcerated individuals1 3

but also for their families and communities.4 10 This phenomenon is often described as a "spillover" effect of mass incarceration.10 For example, incarceration of a family member has adverse intergenerational health consequences, including a high risk of learning disabilities, mental health conditions, behavioral problems, and developmental delays in children.4,5 Women with incarcerated partners have elevated rates of cardiovascular risk factors, anxiety, depression, and overall poor health.6 8 Furthermore, given the extensively documented structural racism inherent in and reproduced by mass incarceration,11 its collateral consequences contribute to and exacerbate racialized health inequities.

Most research concerning the spillover effects of mass incarceration defines incarceration as an individual-level exposure.4-9 Few studies consider incarceration as a community-level contextual exposure, but there are strong theoretical reasons to do so. Multiple pathways link incarceration to negative health effects that operate at the community level through the destruction of community social and economic resources.2 The cycle of imprisonment and reentry disrupts local economies and housing markets and increases the strain on social service systems.12-14 Furthermore, incarceration impedes social integration, an important community-level protective factor against morbidity and mortality.2 As mass incarceration erodes these crucial social and economic resources, it threatens the ability of communities to collectively build safe and healthy environments.15 Jail incarceration, in particular, threatens social ties and local economies through what has been described as "coercive mobility," or the disruptive effects of individuals cycling in and out of the criminal justice system.15,16

Emerging empirical literature supports the hypothesis that community-level exposure to high incarceration rates affects community health. Living in a community with high incarceration rates is associated with a higher risk of cardiometabolic disease, major depressive disorder, and generalized anxiety disorder, after adjusting for communitylevel risk factors such as poverty and crime rates.10,17 However, studies have been conducted primarily among local samples using cross-sectional data, with the exception of a recent study examining the association between incarceration and drug-related mortality nationally.18 We build on the literature and address previous study design limitations; our study is among the first, to our knowledge, to analyze the association between jail incarceration as a contextual exposure and an essential indicator of county health- mortality-drawing on a longitudinal national data set.

METHODS

We conducted retrospective longitudinal county-level analyses to evaluate the relationship between lagged county jail incarceration rates and all-cause mortality rates in the United States from 1987 to 2016. We included all US counties with available data in the analyses. We treated the 5 counties in New York City as 1 because of their unique jailing structure.

Data Sources and Measures

We obtained all data from public sources, and data can be accessed via the referenced Web sites.

Jail incarceration. The exposure of interest was jail incarceration rate, calculated by dividing the average daily population of each county jail by the total county population. In counties with multiple jails, data were aggregated. Average daily population reflects an estimation of prevalence and not the total incidence ofjail incarceration overa year. We obtained average daily population counts from 2 sources: the Bureau ofJustice Statistics' (BJS) Census ofJails19 and the Annual Survey of Jails (ASJ).20 The Census ofJails is fielded every 5 to 8 years and captures data for all local jails in the United States. The ASJ collects data from a nationwide sample of several hundred local jails. The ASJ is fielded every year, except years when the Census of Jails is fielded. The sample of jails drawn for each ASJ is based on information collected from the most recent Census of Jails.

All US jails are grouped into 10 strata based on average daily population. In 8 of the 10 strata, a random sample ofjails is selected. For the remaining 2 strata, all jails are selected for the survey based on BJS policy, primarily because they are operated by multiple jurisdictions or have large populations. As a result, the sample is skewed toward larger jails. We included Census ofJails data if the county was represented at any point in the ASJ data set. Thus, each county in the analysis had data for a minimum of 2 years (n = 6) and a maximum of the full 30-year period (n = 202). On average, a county was represented in the analysis for 15.5 years.

County population totals were obtained from the Census Bureau's Intercensal Estimates of the Resident Population for Counties and States (Intercensal Estimates).21 Population data were missing for 3 county-year units, leaving 29 266 county-years available for analysis. We modeled jail incarceration rates both continuously and as quartiles.
Mortality. The outcome of interest was all-cause mortality rate. We first modeled total county mortality rates, followed by an analysis of age-specific mortality using mortality rates for the following 5 age groups: youngerthan 15, 15 to 34,35 to 54, 55 to 74, and 75 years and older. We obtained all mortality rate data (1988-2017) from the Centers for Disease Control and Prevention Wide-Ranging Online Data for Epidemiologic Research Underlying Cause of Death database,22 which provides a count of total number ofdeaths per county per year per age group and an estimate of total population to calculate crude mortality rates. We treated mortality rates continuously in the analyses. Mortality data were missing for 25 countyyear units, leaving 29 241 county-years remaining for final analysis.
Potential confounders. Because the fixedeffects regression models we employed control for all unobserved time-invariant confounders, we identified potential timevarying confounders based on their hypothesized relationships with jail incarceration and mortality. The first set of potential timevarying confounders included county median age, poverty rate, crime rate, and Black resident population as a percentage of total population. We selected median age because younger adults have a higher prevalence of criminal justice involvement and incarceration23 and lower mortality than do older adults. We selected county poverty rate and Black resident population percentage as potential confounders because of the well-documented criminalization oflowincome communities and communities of color11,13,24 and the demonstrated mortality disparities among these groups. We selected county crime rate as a potential confounder because of the direct link between crime and incarceration and the role of crime in influencing safety and mortality. We adjusted for county median age using an 18-level variable with an indicator for the 5-year category containing the median age based on the Intercensal Estimates.21
We obtained county poverty rates for 1989 through 2015 from the Census Bureau's Small Area Income and Poverty Estimates system.25 The county poverty rates reflect the percentage of all ages below the federal poverty level. For early years with missing data (1986-1988), we carried last observations backward. Foryears with missing poverty data for some counties (1990, 1991, 1992, 1994, 1996), we carried the closest previous data available for each county forward. We obtained county crime data from the Federal Bureau of Investigation (FBI) Uniform Crime Reporting Program,26 and these data reflect all recorded part I offenses (murder, rape, robbery, aggravated assault, burglary, larceny, auto theft, and arson). We divided total crime estimates by county population from the Intercensal Estimates21 to obtain county-level crime rates. Crime data were missing for 1993 and 2015 and were replaced with the corresponding county's crime data from the preceding year. Finally, we calculated the Black resident population in each county as a percentage of the county population using data from the Intercensal Estimates.21
We included a second set of potential time-varying confounders in additional models: county unemployment rate, state incarceration rate, and political party control of state legislature. We selected county unemployment rate as an additional measure of economic well-being, hypothesized to be associated with incarceration and mortality. We obtained county unemployment rates for 1990 through 2015 from the Bureau of Labor Statistics' Local Area Unemployment Statistics program.27 For early years with missing data (1986-1989), we carried last observations backward.
We selected state incarceration rate and party control of state legislature as potential confounders that may reflect state-level differences in political climate or specific policies concerning criminal justice and health care. We obtained state incarceration rate data for all years from the BJS National Prisoner Statistics program,28 and these data reflect the total population under custody in each state divided by state population. We obtained party control of state legislature data for all years from the National Conference of State Legislatures29 and categorized them as Democrat, Republican, or split. We assessed multicollinearity by calculating correlation coefficients for all variables in the model and found that no 2 variables were highly correlated (Figure A, available as a supplement to the online version of this article at http:// www.ajph.org).
Statistical Analyses
First, we calculated descriptive statistics for all variables of interest. To ensure the correct temporal order of the

hypothesized association between jail incarceration rates and subsequent county mortality rates, we employed a time-lag in our analyses (Figure B, available as a supplement to the online version of this article at http://www.ajph.org). To predict county mortality rate in a given year (t2), we included countyjail incarceration rate for the previous year (t|). To ensure that potential time-varying confounders in adjusted analyses were not mediators on the causal pathway between the exposure and outcome, we lagged these covariate data by 2 years (t0).

Using this time-lag, we conducted 2 sets of analyses. First, we modeled changes in total mortality. Second, we modeled changes in age-specific mortality. All analyses employed quasi-Poisson regression models with county and year fixed effects to account for all unobserved stable differences between counties and over time that may confound the relationship between jail incarceration and mortality. We employed quasi-Poisson models to account for the overdispersion that was apparent in initial Poisson models.30

In all models, we estimated county fixed effects by including k - 1 dummy variables for k counties.31 The inclusion of the county dummy variable removes all between-county variance from the estimation of the association between jail incarceration rates and mortality rates, leaving only within-county variance to account for any observed association. As a result, only counties whose jail incarceration rates vary over time contribute to model estimation; those with no withincounty variation are "differenced out" of the estimation. By essentially using each county as its own control, the fixed-effects approach rules out any observed or unobserved stable selection or confounding factors that render high incarceration counties unexchangeable (on all other causes of mortality) with low incarceration counties, assuming that the effects of those stable county characteristics are also time invariant.31 We used the same dummy variable method for year fixed effects.

Total mortality analysis. First, we modeled jail incarceration rate as a continuous exposure. Model 1 included county jail incarceration rate and county and year fixed effects. Model 2 included the variables in model 1 plus the first set of potential time-varying confounders. Model 3, the fully adjusted model, included the variables in model 2 plus the second set of potential time-varying confounders. We repeated these 3 models but split the distribution ofjail incarceration rates into quartiles to aid in interpreting the association in relative rather than absolute terms. As a result, only counties with quartile changes in jail incarceration rates contributed to estimation in this set of models. We calculated quartiles across all years to account for national changes in jail incarceration rate over time.

Age-specific mortality analysis. Given the important role of age distribution in shaping a county's mortality and incarceration rates, we also conducted an age-specific analysis. We fit the fully adjusted model (model 3), excluding county median age as a covariate, with the outcomes of age-specific mortality rate for the 5 age groups described. These models included jail incarceration rate, county and year fixed effects, plus all time-varying confounders.

Sensitivity analyses. We conducted 3 sensitivity analyses using the described methods with the following changes: (1) using jail incarceration data compiled by the Vera Institute of Justice, which uses linear interpolation for counties missing from the ASJ,32 (2) including county random effects rather than fixed effects, and (3) lagging the party control of state legislature data by 3 and 4 years as opposed to 2 years.

We limited analyses to county-years with complete data and performed analysis in R version 3.6 (R Foundation for Statistical Computing, Vienna, Austria) using the dplyr, ggplot2, gtools, and lme4 packages.

RESULTS

The sociodemographic characteristics of the 29241 county-year units in the study, representing 1884 unique counties and county equivalents (60% ofall US counties and county equivalents), are presented in Table 1 by jail incarceration rate quartiles. Table 2 presents the number of counties represented in the data set by geography and year.

Totai Mortality Analysis

Jail incarceration rate as a continuous exposure. The results from the 3 models treating jail incarceration rate as a continuous exposure are presented in Table A (available as a supplement to the online version of this article at http://www.ajph.org). The results demonstrated that small increases in jail incarceration rate were associated with small increases in total mortality at the county level. In the fully adjusted model (model 3), a percentage point increase in jail incarceration rate was associated with a 0.4% increase in total mortality rate (risk ratio [RR] = 1.0038;

95% confidence interval [CI] = 1.0034, 1.0042).

Jail incarceration rate in quartiles. Seventyfive percent of counties experienced a quartile-level change in jail incarceration rate over the study period. Figure 1 presents the observed within-county associations between jail incarceration rate quartile and total mortality rates in the fully adjusted model (model 3). The numerical findings are presented in Table B (available as a supplement to the online version of this article at http:// www.ajph.org). In the fully adjusted model, a within-county change in jail incarceration rate from the first to second quartile was associated with a 2.5% increase in total mortality rate (RR= 1.03; 95% CI = 1.02, 1.03). Additionally, we observed a dose-response relationship: change in jail incarceration rate from the first to third and first to fourth quartiles was associated with stepwise increases in mortality rates (RR = 1.06; 95% CI = 1.05, 1.06; RR = 1.06; 95% CI = 1.06, 1.07; respectively).

Age-Specific Mortality Analysis

Figure 1 also presents the associations between quartiled within-county change in jail incarceration rate and age-specific mortality rates from the fully adjusted model (model 3). Figure 2 presents the modelpredicted age-specific mortality rate as a function of within-county change in jail incarceration rate from the fully adjusted model. The numerical findings are presented in Tables B and C (available as a supplement to the online version of this article at http:// www.ajph.org). The association between change in jail incarceration rate and subsequent mortality rate was more pronounced among individuals younger than 75 years. The association was strongest with respect to the mortality of those aged 15 to 34 years. In the fully adjusted model, a change in jail incarceration rate from the first to second quartile was associated with a 7.4% increase in the mortality rate of those aged 15 to 34 years (RR = 1.07; 95% CI = 1.06,1.09). Again, we observed a dose-response relationship for all age groups.

Sensitivity Analyses

The findings from our sensitivity analyses were not meaningfully different from our reported findings with 1 exception: the change in mortality rate associated with a percentage point change in jail incarceration was larger when using the data set compiled by the Vera Institute ofJustice.32 Because the Vera Institute ofJustice used linear interpolation to fill in missing data from smaller jail jurisdictions, a percentage point change reflects a more extreme change in this data set. The results from all sensitivity analyses are presented in Table D (available as a supplement to the online version of this article at http://www.ajph.org).

DISCUSSION

Our findings support the hypothesis that increases in county jail incarceration rates are associated with increases in county mortality rates, after controlling for all unobserved stable county characteristics and observed time-varying confounders. Specifically, a change in jail incarceration rate from the first to second quartile was associated with a 2.5% increase in total mortality and a change from first to fourth quartile was associated with a 6.4% increase in total mortality. We also found that the association between jail incarceration and county mortality was stronger among younger individuals (< 75 years); a change in jail incarceration rate from the first to second quartile was associated with a 7.4% increase in the mortality of those aged 15 to 34 years. This finding suggests that county-level jail incarceration may be influencing premature mortality at the county level.

These findings are consistent with emerging research concerning the community-level collateral health consequences of mass incarceration. In their prospective analysis of data from the Detroit Neighborhood Health Study, Hatzenbuehler et al. found that individuals living in neighborhoods with high prison incarceration rates were more likely to meet criteria for current and lifetime major depressive disorder and generalized anxiety disorder than were individuals living in neighborhoods with low prison rates.10 Using cohort data from Atlanta, Georgia, Topel et al. found that individuals living in neighborhoods with high incarceration rates were more likely to have dyslipidemia and metabolic syndrome than were individuals in neighborhoods with low incarceration rates.17 Furthermore, race-stratified analyses showed that these associations were stronger among Black individuals.17 Finally, Nosrati et al. found that 1 SD increase in jail incarceration rates was associated with a 1.5% increase in drug use disorder mortality at the county level.18 This study builds on this existing evidence by identifying an additional association with the basic health indicator of overall mortality. Together, these studies provide strong evidence of the

widespread negative health outcomes associated with mass incarceration in the general population.

There are many plausible mechanisms that may underlie the observed association between change in county jail incarceration and county mortality, operating via material and psychosocial pathways. Materially, incarceration disrupts local economies by removing working-age individuals from the labor market.33 Stigma and institutionalized discrimination introduce barriers to gaining employment and reintegrating into society that contribute to intergenerational cycles of poverty.13 The lack of adequate reentry supports also places strain on communities' social service systems.13 From a psychosocial perspective, the disruption caused by the revolving doors of the criminal justice system impedes a community's ability to build social ties and maintain social integration.2,15,16 Social impediments such as these may contribute to community mistrust and perceived safety, which can affect the psychological health of community members.10 These compounded stressors strip communities of the economic and psychosocial resources needed to safeguard community health and, as a result, may be reflected in changes in mortality rates at the county level.

The stronger association observed among younger individuals may reflect impacts of direct exposure to incarceration, as opposed to community-level exposure, given that this population is more likely to be criminal justice-involved.23 This stronger association may also reflect the role of community-level incarceration in influencing premature death by unnatural causes as opposed to aging-associated diseases. More research concerning cause of death would be helpful in clarifying this issue and further elucidating the underlying mechanisms at play in this study. Furthermore, in future research we aim to examine the role of institutional and structural racism, given that mass incarceration is a racialized social policy that disproportionately harms communities of color and given the existing research demonstrating heightened community health impacts of incarceration in Black communities.17

Strengths and Limitations

This study has a number of strengths, including the use of large, longitudinal data sets. Additionally, the inclusion of county and year fixed effects and adjustment for time-varying confounders addressed measured and unmeasured confounding. Further, we conducted multiple sensitivity analyses, all ofwhich suggest that our findings are robust.

However, this study has important limitations. First, as with all observational data, there may be some unmeasured time-varying confounding that explains the observed relationship between county jail incarceration and mortality. For example, an additional measure ofcounty economic well-being may be influencing this association. However, there was little change in county poverty and unemployment rates over the study period, suggesting that our inclusion of county and year fixed-effects controls for much of this potential confounding. Second, we did not have access to complete data for all jails in the United States. We also did not have complete data for all time-varying confounders for all years, and the accuracy ofthese data may vary by jurisdiction. For example, we cannot be certain of the reliability of the county crime data obtained from the FBI Uniform Crime Reporting Program.

Third, although the within-county analysis is robust in its adjustment for selection into counties, it limits the analysis to only those counties that experienced changes in jail incarceration rates over the study period. Fourth, counties represent large, heterogeneous geographic areas; the present analysis may lack the precision to capture more local effects ofmass incarceration. Finally, although our time-lag approach ensures accurate temporal order of exposure, outcome, and confounders, there is likely autocorrelation between our confounders at different periods. Therefore, our results may be underestimating the true effect by adjusting for these confounders.

Public Health Implications

Our findings, which provide evidence of a county-level association between change in jail incarceration and mortality, are alarming: the jail system, ostensibly designed to protect the public while serving justice, may in fact harm communities. In particular, jail incarceration may have a stronger impact on premature mortality among younger populations. Given the inequitable distribution of incarceration, these spillover effects likely exacerbate socioeconomic and racialized health inequities at the community level. In addition to existing evidence of the widereaching health impact of mass incarceration at the community and individual levels, our findings provide further empirical evidence of the harms of current criminal justice policy. These findings can be used by criminal justice reform and decarceration movements as they develop strategies and interventions to end mass incarceration.

CONTRIBUTORS

S.Kajeepeta conducted the analysis and drafted the article. C. G. Rutherford and S.J. Prins assisted with data analysis. K.M. Keyes, A.M. El-Sayed, and S.J. Prins conceptualized the analysis. All authors reviewed, edited, and approved the final article.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

HUMAN PARTICIPANT PROTECTION

The Columbia University institutional review board deemed the study not human participants research under 45 CFR 46.

Sidebar

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DETAILS

Subject:	Statistics; Population; Judicial system; Criminal statistics; Censuses; Public health; Poverty; Estimates; Counties; Mortality; Economic conditions; Criminal justice; Prisons; Empirical analysis; Statistical analysis; Mortality rates; Vital statistics; Crime; Age; Confidence intervals; Imprisonment; Jails; Unemployment; Prison reform; Missing data

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Public Health Research, Practice, and Ethics for Justice-Involved Persons in the Big Data Era

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ABSTRACT (ENGLISH)

In the big data era, a host of new data are being generated as people-often unwittingly- enlarge their digital footprint via Internet activity, purchases with credit cards or consumer loyalty cards, smartphones and wearable technologies, and electronic health records and genetic sequencing; more data are also generated as government entities become increasingly efficient and expansive in collecting information. With varying success, attempts at harnessing these data include using cellphone location data to understand disease transmission, measuring the impact of public health interventions by analyzing Twitter, and predicting disease outbreaks based on search engine results.

FULL TEXT

We are living in an era of "big data," which is characterized by tremendous growth in data production, linkage, and analysis. This growth is shifting the landscape of possible opportunities and harms for public health research and practice, particularly for those affected by mass incarceration. We briefly examine the emerging role and ethical implications of using big data in public health, discuss these issues as they relate to justice-involved persons (JIPs), and suggest initial steps to promote ethical analyses and guideline development in this area.

In the big data era, a host of new data are being generated as people-often unwittingly- enlarge their digital footprint via Internet activity, purchases with credit cards or consumer loyalty cards, smartphones and wearable technologies, and electronic health records and genetic sequencing; more data are also generated as government entities become increasingly efficient and expansive in collecting information. The use of these new data sources by themselves or in combination offers unprecedented potential for public health insight. With varying success, attempts at harnessing these data include using cellphone location data to understand disease transmission, measuring the impact of public health interventions by analyzing Twitter, and predicting disease outbreaks based on search engine results.

Although these methods track patterns across populations rather than focusing on identified individuals, the expansive availability of data could allow such a shift. For example, Facebook has deployed artificial intelligence-based algorithms to flag user posts deemed to suggest imminent self-harm.1 When a post is flagged, company staff call the user's local 911 center to dispatch first responders. In another example, state health departments are funded to use mandatorily reported HIV laboratory results routinely collected during clinical care to not only track the HIV epidemic as a whole but also to flag individual patients whose lack of recent laboratory records indicate that they are out of care. With the help of public or fee-based databases, health department staff can then attempt to locate and contact these patients and-ifthe patients agree-arrange for the resumption of their HIV care.2,3 Although approaches using big data for public health intervention are still rare, with growing data convergence and analytic power, they are likely to become increasingly common.

These big data approaches raise ethical questions for public health research and practice: What are the appropriate

bounds on data collection for public health? For what health conditions and contexts should public health entities use big data to intervene at the individual level? How will increased data collection and subsequent intervention affect the public's trust of public health entities? How do considerations of privacy and risks for data breaches change with expanded data collection and linkage? To what extent should public health entities promote data transparency, share data with other entities (e.g., commercial, law enforcement), or provide mechanisms of control for those represented in the data? And most provocatively, What are the dangers that mass data collection for public health can subvert freedoms of speech, movement, or assembly? These questions reflect tensions among some of the most important values that drive and justify public health planning: public health benefit, harm minimization, control, justice, trustworthiness, transparency, accountability, and social value.4-6

Although ethical issues are commonly considered by ethical review committees or institutional review boards, these bodies may be inadequately equipped to address the challenges of big data approaches.7 For example, informed consent and minimal risk, concepts developed for clinical research, may be difficult to apply in the context of big data,6,7 because data may be publicly available and scalability and automation can surreptitiously heighten the risk involved with activities traditionally deemed benign.

These ethical issues, complex in their own right, are further complicated when considering big data applications for JIPs. On the one hand, big data interventions may be particularly beneficial for JIPs, considering this population's heavy burden of disease and insufficient access to care. In addition, the justice system's routine-albeit variable -data collection provides opportunities for research and intervention not possible with other vulnerable populations (e.g., homeless persons). Some would argue that not using the justice systems' data to support JIPs' health is a moral failure. Further, the lack of unified reporting and common barriers to accessing police, court, and incarceration data can leave racial and economic inequalities in the justice system unchecked; big data tools that gather and process existing data could play an essential role in creating a more transparent evidence base to inform strategies to end mass incarceration.

On the other hand, big data approaches may be uniquely harmful or less effective among JIPs. For example, via Web sites featuring mug shots, publicly available court records, and the use of electronic surveillance monitors (i.e., GPS ankle monitors), JIPs are already heavily monitored. Creating public health systems that rely on this tracking may further perpetuate the disproportionate surveillance of persons of color as well as that of low-income persons, who may be least able to curate their digital footprint. Further, awareness of this tracking could induce anxiety or foster avoidance of routine health care, propagating health disparities. Similarly, the effective implementation of big data interventions for JIPs may be curtailed if they are generally wary of contact from government entities, even when the goal ofthe intervention is to provide services that are otherwise difficult to obtain.

We believe that ethical inquiries involving a wide range of stakeholders across an array of criminal justice and health contexts are needed. Stakeholders could include public health officials, privacy experts, jail or prison administrators, researchers, data scientists, and- most essentially-JIPs. Each perspective contributes critical data of different types, including scientific projections, legal considerations, practical administrative concerns, and experiential insights. Together, these inquiries can provide the building blocks for a more systematic framework for evaluating the benefits and harms of public health research and practice among JIPs in this new data age.

One powerful mechanism to encourage ethical analyses is for funders such as the National Institutes of Health and the National Institute of Justice to make such requirements commonplace. Doing so would motivate researchers and public health professionals to evaluate the ethical dimensions of their individual projects, while at the same time promoting the development of a corresponding literature of case studies that could be examined and synthesized. In turn, findings could prompt greater academic, government, and public discussion and inform the development of regulatory guidelines.

As the pace of technological advances quicken and norms in data, surveillance, and intervention continue to shift, society is challenged with defining the appropriate boundaries for these activities. Although big data approaches have great potential to advance public health, the risks involved in these approaches may also be heightened. We must proceed carefully with these approaches to ensure that they reduce rather than exacerbate health disparities.

Creating greater ethical discourse about big data and public health research and practice for vulnerable populations, including JIPs, is critical in cultivating an equitable and effective public health system.

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D. L. Rosen wrote the initial draft of the editorial. All authors conceptualized and critically revised the editorial.

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CONFLICTS OF INTEREST

The authors have no conflicts ofinterest to declare.

Sidebar

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DETAILS

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Applications of the American Public Health Association's Statement on Addressing Law Enforcement Violence as a Public Health Issue

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FULL TEXT

In 2018, the American Public Health Association (APHA) adopted a policy statement recognizing law enforcement violence as a public health issue. The statement was informed, in part, by a public health literature that documents consistent associations between law enforcement violence and adverse health outcomes, including physical health (e.g., injury), mental health (e.g., posttraumatic stress disorder), and death.1 This literature also finds inequitable distributions of law enforcement violence that disproportionately target Black, Latinx, and Native American communities; immigrants; people who identify as transgender; people who identify as lesbian, gay, bisexual, or queer; those experiencing houselessness; low-income individuals; sex workers; and people who use drugs.1 Rooted in an understanding of how structural racism and institutional oppression shape population patterns of law enforcement violence, the statement proposes a public health alternative for ensuring public safety and well-being. For this editorial, we examined the extent to which the statements recommendations have been implemented. A summary of our findings, including illustrative examples as well as further opportunities to leverage the statement in support of upstream, public health approaches to intervening on law enforcement violence, follows.

ACTION STEPS

Supported by evidence suggesting that deploying the criminal legal system to address activities precipitated by inequitable distributions of resources is costly, ineffective, and health harming, the statement instead recommends a public health-centered approach. Based on existing, multigenerational work by grassroots, antiracist organizing campaigns against state-mediated violence and community members most directly affected by such violence, the statements 10 action steps for understanding and addressing law enforcement violence comprise four broad categories: (1) improvements to data collection and research; (2) reallocation of resources, including reversal of

militarization; (3) decriminalization; and (4) structural changes to law enforcement policies and procedures (see the box on page S31). For a comprehensive list ofeach action step, see the full policy statement.1

APPLICATIONS OF THE STATEMENT

We present examples of how these action steps have been leveraged to advance cross-sector efforts to address law enforcement violence.

Education

Raising awareness of this public health framing is key to achieving the systemic change necessary to address law enforcement violence as a public health issue. To that end, the statements formal adoption generated multimedia coverage (e.g., mainstream press, social media, radio shows) across sectors, emphasizing its broad applicability and infusing the ongoing national conversation on law enforcement violence with a public health framing. Adapting the statement as an educational tool in academic settings has also increased its accessibility to learners in public health and beyond. For example, the statement has been used in a University of Michigan School of Public Health course (William Lopezs Health Impacts of Immigration Law Enforcement in the US) in which students review literature on policing, draw connections between immigration enforcement violence and police violence, and examine the role of marginalized communities in resisting state violence.

Research

In addition to summarizing the existing literature, the statement has itself been cited in peer-reviewed publications to highlight the need for further research on systemic inequities in law enforcement violence.2,3 It has also been used to inform ongoing efforts to fill existing data gaps. For example, The Justice Study, a project led by the University of California, San Francisco, and Santa Clara University used research gaps identified in the statement to inform their survey development, with preliminary findings forthcoming.4

Practice

The statement applies a public health framing to align existing by law enforcement. Once adopted, the national grassroots organization Critical Resistance and Bay Area-based Public Health Justice Collective gathered public health workers, clinicians, and advocates to discuss strategies and share resources for its implementation.5

Policy

Several of the statement's action steps seek to inform federal, state, tribal, and municipal policies. As a result, policy research and advocacy organizations, grassroots activists, and others have cited the statement in public testimony and open letters against proposed state and local legislation to form private armed forces (Maryland), entrench gang databases (Cook County, IL), newly construct jails (Los Angeles, CA), criminalize houselessness (San Francisco, CA), and host Urban Shield's militarized SWAT training-succeeding in diverting federal funding to demilitarized disaster preparedness trainings (Alameda County, CA).6 In several instances, copies of the policy statement were distributed as a resource for policymakers after testimony.

FUTURE DIRECTIONS

Altogether, these examples illustrate how the statement has been used to support a public health approach for intervening on law enforcement violence and improving health equity. Yet, more opportunities remain. For example, while crowd-sourced, open data sets such as The Counted have endeavored to document real-time US legalintervention injuries and deaths, the need for a nationwide, mandatory-reporting database still remains.1,7 Thus, researchers may leverage the statement to advocate establishing this database. Policymakers may also turn to its evidence sections to inform public health-oriented policy alternatives (e.g., divesting from youth jails and investing in school spaces). Furthermore, although the statement's recommendations are tailored to a US context, they could also serve as a basis for new and ongoing efforts among those seeking to understand and address harm perpetrated by law enforcement and other expressions of militarized state violence as a public health issue internationally. Ultimately, the statement can serve as a unifying resource-using an upstream, community-based, communityled framework to align the efforts of public health educators, researchers, policy advocates, organizers, and activists to address law enforcement violence.

CONCLUSIONS

APHA has officially recognized law enforcement violence as a public health issue that warrants an orchestrated public health-centered intervention. A public health approach neither accepts harm as a given nor accepts punishment as prevention. Rather, a public health approach divests from a punishment framework and invests in a prevention framework, centering community-based and community-led efforts to public safety and well-being. This includes shifting the conditions in which people live, work, and go to school by committing financial and human resources to the social determinants of health (e.g., education, housing, economic opportunity). As such, the APHA policy statement proposes evidence-based, structural interventions for minimizing exposure to law enforcement violence and its health consequences. In this editorial, we have provided examples of how these action steps are indeed actionable. Specifically, we have highlighted instances in which the statement has been leveraged for public health action and noted opportunities for further application.

As the issue of law enforcement violence continues to feature in national conversations and garner energy around reform, public health has a key role to play. As researchers and practitioners, the public health workforce is well-positioned to contribute to the ongoing work of organizers and community members most affected by (1) documenting the structural determinants and health consequences of law enforcement violence and (2) informing structural interventions to address them. In short, to address law enforcement violence as a public health issue, it is critical that the public's health and well-being be prioritized. ÂfPU

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CONFLICTS OF INTEREST

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Sidebar

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DETAILS

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Reframing Mass Incarceration as a Social-Structural Driver of Health Inequity

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ABSTRACT (ENGLISH)

With its provocative title, Mass Incarceration Threatens Health Equity in America,1 aJanuary2019 Robert Wood Johnson Foundation report highlighted the inextricable link between mass incarceration and health inequity. That report, in combination with this supplement issue, reflects a seismic shift in the conceptualization of incarceration as a fundamental social-structural driver of health inequities. This latest supplement issue aligns with critical theoretical perspectives (e.g., critical race theory, intersectionality, ecosocial theory) making inroads in public health, as well as the Perspectives From the Social Sciences mission to critically engage public health.2(p15)

FULL TEXT

With its provocative title, Mass Incarceration Threatens Health Equity in America,1 aJanuary2019 Robert Wood Johnson Foundation report highlighted the inextricable link between mass incarceration and health inequity. That report, in combination with this supplement issue, reflects a seismic shift in the conceptualization of incarceration as a fundamental social-structural driver of health inequities. This latest supplement issue aligns with critical theoretical perspectives (e.g., critical race theory, intersectionality, ecosocial theory) making inroads in public health, as well as the Perspectives From the Social Sciences mission to critically engage public health.2(p15)
HISTORY OF INCARCERATION AND HEALTH IN AJPH

This supplement issue represents AJPHs most recent enterprise into the topic of incarceration and health but not its first. The October 2005 issue of AJPH3 that focused on prisons and health deserves that distinction. Moreover, for almost 80 years, AJPH has published research, editorials, and commentaries on the topic of incarceration and health. My keyword search for incarceration in AJPHs archives yielded 830 citations, a number that would likely swell had I added keywords such as jail, prison, prisoners, and inmates. Historically, topics such as screening for infections, including gonorrhea (1940), hepatitis B (mid-1980s), and HIV (late 1980s), and the medical care of incarcerated people were common.

My cursory review of these articles found that with a few notable exceptions, most of the articles published before the 2005 issue offered a relatively noncritical view of the topic of incarceration and health. In line with conventional biomedical and epidemiological perspectives, most authors conceptualized incarceration as primarily a demographic variable rather than as a system of structured inequality.

INCARCERATION AS A PUBLIC HEALTH CRISIS

Although the 2005 issue was designed to amass best practices on incarcerated people and health, a handful of the articles (e.g., Criminal [Injustice in the City and Its Associated Health Consequences) and subsequent letters to the editor were harbingers of a shift toward a more critical stance exemplified in this supplement issue. For example, an insightful 2006 letter advocated for the field to recast incarceration as the public health crisis it is.4(p589) Another summoned a nationwide conversation . . . to challenge correctional practices and legal policies that exacerbate health disparities.5(p1148) Echoing these themes, a 2014 editorial sounded a clarion call to the field to address mass incarceration.6 With this supplement issue, AJPH has done so-and done so critically.

Critical perspectives flip conventional biomedical and epidemiological scripts by interrogating, exposing, and challenging assumptions about policies, institutions, and practices that obscure power relations that foster inequity and oppression and concern how dominant groups construct knowledge, facts, and problems. 2(p15) A critical take on the topic of mass incarceration and health inequities necessarily begins with criticism of mass incarceration as a system of power relationships designed historically to bolster White supremacy. For example, at the end of the Civil War, southern state legislators relied on the US criminal justice system to sanction the aggressive policing, arrest, and mass incarceration of freed Black people. In 1865 and 1866, southern state legislatures passed discriminatory laws-known as Black Codes-that criminalized acts such as vagrancy and loitering for Black people. These laws swiftly increased the ranks of incarcerated Black people, a reality that persists. Oppression is always intersectional, however. Structural racism intersects with ruling socioeconomic class, colonial, and conventional gender and heteronormative interests to ensure that people located at the most marginalized sociodemographic intersections are at increased risk for, or disproportionately represented in, the nation's carceral systems.

Marking a critical shift in the field's response to this inequity, this supplement issue breaks new ground in at least three significant ways. First, many of the articles spotlight the collateral effect of mass incarceration on the health of not only incarcerated people but also their children, families, and entire communities. Second, the articles build on the foundation ofanother article from the 2005 issue-Coming Home From Jail: The Social and Health Consequences of Community Reentry for Women, Male Adolescents, and Their Families and Communities7-to highlight the deleterious effect of the carceral state on health not just during incarceration but also before and after it. Finally, they highlight the relative dearth of current nationally representative data sets to facilitate the investigation of new or understudied topics relevant to mass incarceration and health.

NEW CONVERSATIONS

This supplement issue arrives at an important juncture in US history, one characterized by momentous transformations in the national conversation about incarceration. Decades of grassroots activism, research, scholarship, and political advocacy have raised awareness that mass incarceration is unjust, financially unsustainable, ineffective, and racist. This work has even managed to penetrate our polarized political climate. To wit, in December 2018, the First Step Act, a bipartisan criminal justice bill designed to reduce the size of the federal prison population, became law. Although it falls far short of what criminal justice reform advocates had hoped, it nonetheless represents a substantial departure from the toughon-crime sentiments of the War on Drugs, three-

strikes law, and mandatory minimum sentencing era. Federal and state initiatives to reduce incarceration have facilitated a reduction in incarceration rates; this good news must be contextualized within the reality that compared with their White counterparts, Black, Latino, and Native American people still bear the disproportionate brunt of incarceration.

The opioid epidemic also has shaped the tonal change about incarceration. Whereas incarceration historically has been the national response of choice for drug offenses perpetrated by Black and Brown people, the opioid epidemic's greater effect in White US communities has ushered in a markedly more compassionate response from predominantly White policymakers and public health officials who now favor reframing addiction as illness and perceive drug treatment as a more effective remedy than incarceration.

FUTURE DIRECTIONS TO IMPROVE HEALTH EQUITY

The supplement issue is poised to advance important theoretical and empirical knowledge about mass incarceration and health inequity. It also spotlights the gaps for future research, policy, and practice to fill. One is the need to recognize mass incarceration as both a human rights and a health equity issue. Almost three decades ago, the United Nations Human Rights Office of the High Commissioner issued 11 Basic Principles for the Treatment of Prisoners (http:// bit.ly/2qOZGeP). Principle 9 addresses health: "prisoners shall have access to the health services available in the country without discrimination on the grounds of their legal situation." Not surprisingly, people from the communities most affected by mass incarceration in the United States are also those who experience the most disproportionate and stark health inequities regardless of incarceration status. The notion that health is a human right for marginalized people inside and outside of carceral systems should guide how the field responds to political and structural threats to health equity. The supplement issue also signals the path forward for future research, policy, and practice on a host of understudied topics such as how structural interventions to reduce unemployment, poverty, and racism or improve education and access to drug treatment could decrease or eliminate mass incarceration and in turn many health inequities.

The guest editors of the 2005 supplement on incarcerated people and health were prescient in their caution that the field should transcend "simply quantifying or describing the problem."3(p10) I echo their admonition. Indeed, the field will have failed if future supplements and articles simply feature more advancedorsophisticated methods of quantifying the effects of mass incarceration and health inequity without working to reduce the policies and practices that bolster mass incarceration and health inequity in the first place. >4jPI-l

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CONFLICTS OF INTEREST

The author has no conflicts of interest to disclose.

Sidebar

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DETAILS

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Policy Determinants of Inequitable Exposure to the Criminal Legal System and Their Health Consequences Among Young People

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ABSTRACT (ENGLISH)

Criminalizing young people, particularly Black- and Brown-identified young people, has increasingly been a feature of US rhetoric, policies, and practices. Thus, the domains in which young people are exposed to the legal system have continued to expand, encompassing their communities, schools, and homes. Importantly, public health researchers have begun exploring links between legal system exposure and health, although this literature is primarily focused at the interpersonal level and assesses associations within a single domain or in adulthood. Using critical race theory and ecosocial theory of disease distribution, we identified potential policy-level determinants of criminalization and briefly summarized the literature on downstream health outcomes among young people. Our analysis suggests that policy decisions may facilitate the targeting of structurally marginalized young people across domains. Future research should (1) position these legislative decisions as primary exposures of interest to understand their association with health among young people and inform institutional-level intervention, (2) measure the totality of exposure to the criminal legal system across domains, and (3) use theory to examine the complex ways racism operates institutionally to shape inequitable distributions of associated health outcomes. (

FULL TEXT

Criminalizing young people, particularly Black- and Brown-identified young people, has increasingly been a feature of US rhetoric, policies, and practices. Thus, the domains in which young people are exposed to the legal system have continued to expand, encompassing their communities, schools, and homes. Importantly, public health researchers have begun exploring links between legal system exposure and health, although this literature is primarily focused at the interpersonal level and assesses associations within a single domain or in adulthood.
Using critical race theory and ecosocial theory of disease distribution, we identified potential policy-level determinants of criminalization and briefly summarized the literature on downstream health outcomes among young people. Our analysis suggests that policy decisions may facilitate the targeting of structurally marginalized young people across domains.
Future research should (1) position these legislative decisions as primary exposures of interest to understand their association with health among young people and inform institutional-level intervention, (2) measure the totality of exposure to the criminal legal system across domains, and (3) use theory to examine the complex ways racism operates institutionally to shape inequitable distributions of associated health outcomes. (Am JPublic Health. 2020;110:S43-S49. doi:10. 2105/AJPH.2019.305440)

The criminalization of young people is increasingly a feature of US rhetoric, policies, and practices.1 Therefore, the domains in which young people engage with the criminal legal system in their daily lives have expanded. These domains include their communities (e.g., police stops), schools (e.g., officer-involved punitive discipline), and homes (e.g., caregiver incarceration). Importantly, exposure to the US legal system in these 3 domains disproportionately affects structurally marginalized young people, specifically those who identify as Black and Brown; lesbian, gay, bisexual, transgender, and queer/questioning; economically disenfranchised; disabled; houseless; and undocumented.2-5 Several explanations have been put forth in the education and criminology literature for this disproportionate distribution and its consequences, including negative impacts on educational attainment6 and pushout into confinement pathways (e.g., incarceration, sex trafficking).7 More recently, the public health literature has begun exploring exposure to the legal system as a determinant of adverse health outcomes. To date, this literature has been largely focused at the interpersonal level (e.g., injury and death from law enforcement violence)8 and primarily assesses these associations within a single domain (e.g., jails or prisons)9 or in adulthood.10

To engage this conversation, we explore structural determinants of criminalization across domains of community, school, and home, specifically focusing on federal, state, and local policy decisions. We then briefly summarize the current literature on potential downstream health outcomes among young people. We conclude with recommendations for further study (see the box on page S44) and their implications for efforts to intervene at institutional levels.

We frame our analysis using Ford and Airhihenbuwas adaption of critical race theory (CRT) for public health12 and Kriegers ecosocial theory of disease distribution.13 In its application to public health, CRT centers racism as a determinant of health inequity and challenges the field to adopt race consciousness: understanding the social constructedness of race, racisms pervasiveness in society, and the complex ways racism operates institutionally to shape distributions of health.12 Ecosocial theory further illuminates particular pathways to embodiment and their multilevel interplay, that is, how the societal and ecological context across levels (e.g., national, state, local) and domains (e.g., home, school, community) becomes biologically embedded.13 Both help us to (1) interrogate the intersectionality of racism and other axes of marginalization, (2) acknowledge the transgenerational latitude of these macrolevel exposures, and (3) hold accountable agents who are empowered by their social location to shape institutional operations and the production of scientific knowledge about health and health inequity.12,13

CRIMINALIZATION AND CRIMINAL LEGAL SYSTEM

For this analytic essay, we employ the Robert Wood Johnson Foundations definition of the justice system as the set of government agencies, policies, and practices responsible for prosecution and punishment, including law enforcement, courts and accompanying prosecution and defense lawyers, correctional facilities, and community reentry and post-release supervision.14

To this, we make 2 changes: (1) we elect to use the language of the criminal legal system in acknowledgment of its unjust application, and (2) we extend this definition beyond elements of the system that fall within traditional settings (e.g., courts responsible for prosecution, correctional facilities) to include its manifestations in spaces largely perceived as beyond its traditional purview (i.e., community, school, home). Unless we conceptualize this exposure across each of the domains in which it operates, we may underestimate its total effect. We also conceptualize this exposure with respect to time (e.g., life course, transgenerationally). Finally, we use the language ofcriminalization to refer to the social construction of criminal activity through the enactment of legislation that deems behaviors or identities illegal or that facilitates systems of legal surveillance.15

DETERMINANTS OF LEGAL SYSTEM EXPOSURE

We examined the structural forces, namely federal, state, and local policies, that may shape inequities in exposure to the legal system. Although this section is organized by domains of community, school, and home, it is critical to emphasize that just as young people's lived experiences are not confined to any one of these domains, neither is the reach of the policies explored herein. Thus, whereas policy development and implementation may be guided by a particular federal department (e.g., Department of Education, Department ofJustice), its implications may extend beyond these perceived silos. Furthermore, policies seemingly unrelated to the legal system, such as those governing the public safety net, may have implications for legal system exposure and should be explored in tandem (e.g., Johnson administration era War on Poverty policies, which scholars have argued laid the groundwork for the criminal legal system's spillover into social service provisions).16

We begin this section against the backdrop of the War on Drugs for 4 reasons: (1) as an illustration of the legal system manifesting across domains of community, school, and home;

(2) as a well-researched example of legislation that criminalized Black and Brown communities in its design and implementation;

(3) as a precursor to similar legislation that mirrored its legal system-centered approach; and

(4) as a system of oppression rooted in historical practices of using discriminatory policy (e.g., antiopium laws, anticocaine laws) to surveil and target immigrant and racially minoritized populations (e.g., Chinese immigrants, Black Southerners).17

First launched in 1968 by President Richard Nixon, the War on Drugs failed to achieve its stated goal of stemming illicit drug use and sales, instead leading to precipitous increases in incarceration, family separation, and community division.18,19 President Ronald Reagan later recommitted to the War on Drugs by approving the 1986 Anti-Drug Abuse Act, creating mandatory minimum sentencing and codifying inequities in the prosecution of cocaine versus crack use.20 As this era saw the rollout of this "tough on crime" legislation, it witnessed the rollback of social safety net provisions, as in the 1983 Social Security amendments and the Family Support Act of 1988.21 These actions served as a model for Clinton administration era divestment from public safety net spending and investment in the legal system (e.g., 1994 Violent Crime Control and Law Enforcement Act), with implications for legal system exposure among individuals and families.21,22

At state and local levels, these federal policies were accompanied by the propagation of "three-strikes" laws, minimum occupancy laws, and stop-andfrisk policies, which essentially operationalized quotas for policing and incarceration.23 Importantly, this complex web of federal, state, and local policies and their implications for young people cannot be understood without explicitly acknowledging the work of structural racism.12 Communities of color have been disproportionately targeted in the design and application of this legislation,13,24 resulting in accordingly patterned population distributions of legal system exposure and involvement.25 Informed by this race consciousness, we now identify potential institutional-level determinants of the legal system's presence in young people's lives within and across these 3 domains.

The Legai System in Communities

Although "community" can be defined in a number of ways, we use it to understand how young people are engaged by the legal system in their neighborhoods. Several studies have examined this26,27 and found a high prevalence of contact between law enforcement officers and young people, particularly in major US cities. For example, in

1 study, 23% of city-dwelling young people reported having personally been stopped by an officer and 75% reported having witnessed or been informed about the stop of someone they know, with first stops occurring as young as aged 8 years and most taking place "on the street."28 These studies note inequities in police contact by race and sex. For example, Black boys experience more frequent stops than do White boys (45% vs 26%, respectively) with similar patterns observed among Black and White girls (18% vs 8%, respectively).28 They also find that as many as 94% of stops result in no charge.19

Exposure to the legal system in a community is often justified by invoking safety-a rationale that CRT might argue is predicated on the construction of Black and Brown children as dangerous.12,25 Indeed, the prevalence of arrest among young people increased rapidly during the 1980s and 1990s in parallel with rhetoric that constructed them as threatening, with 1 estimate suggesting that from 1983 to 1992 White children experienced 110 more arrests per 100 000 compared with 470 more arrests per 100000 among Black children over the same period.29

Citing safety concerns has also been linked to federal spending on local police force expansion and training that not only has remained robust to reductions in support for the public safety net but has continued to increase since the Reagan administration.22 This spending has primarily been concentrated in communities of color, with 1 study finding that between 1980 and 2010, grants from the US Department ofJustice's Office of Community Oriented Policing Services predicted increases in local police spending and, after adjustment for crime and economic inequality, were disproportionately associated with spending in cities with larger populations of Black residents.22 In particular, this literature cites the Clinton administration era's Violent Crime Control and Law Enforcement Act and federal grants from the Department of Homeland Security since its 2002 formation as precipitating this 22 spending.

Scholars have argued that this allocation of resources has contributed to how communities are designed-both physically (e.g., locks barring entry to parks) and demographically (e.g., neighborhood segregation)-to facilitate ease of policing as opposed to the health and well-being of community residents. At the federal, state, and local levels, law enforcement agencies have championed design strategies such as Crime Prevention Through Environmental Design, which posits that the built environment can be designed to reduce crime through territorial reinforcement, access control, and surveillance.30

These design approaches, however, have also been implicitly linked in the literature to the criminalization of young people of color. For example, under the Crime Prevention Through Environmental Design principle of "territorial reinforcement,"30 signage such as "Neighborhood Watch" encourages residents to monitor their communities and report suspicious individuals or activities. Scholars have suggested that in predominantly White neighborhoods, where people of color are constructed as out of place, this can lead to experiences of law enforcement surveillance and violence.31 By contrast, in predominantly Black or Brown neighborhoods, people of color are exposed to law enforcement surveillance and violence as a result of being constructed as threatening.31 In all, this suggests that these approaches may serve to delineate "legitimate and illegitimate" users of space that explicitly and implicitly determine who belongs in a community, who does not belong, and who should be removed.
30,32

The Legai System in Schools

Motivated by empirically unsupported perceptions of growing violence among Black and Brown young people,1 the prevalence of law enforcement officers assigned to US schools increased steadily through the 1990s, with at least 42% of schools deploying armed officers in 2016-the most recent year for which estimates are available.33 This increase has been primarily concentrated in larger, city-based public high schools that serve communities of color.34

The literature suggests that this and other manifestations of the legal system's reach into school spaces have been shaped by the implementation of federal education policy and the accompanying disbursement of federal funds and state-level subsidies.35 In a comprehensive review of these policies, Mallet notes several such examples, including the 1986 Drug Free Schools Act, which repackaged the War on Drugs' punitive accountability measures for school-based implementation and the 1994 Gun-Free Schools Act, which required that states receiving federal funding for K-12 education expel students found on campus with a firearm and refer them to the legal system.36,37 That same year, the Safe Schools Act funded the deployment of school-based law enforcement with the express objective of

fortifying school to local law enforcement collaboration and improving school safety.36 This decade also saw the promulgation of "zero tolerance" policies at state and local levels, extending federally mandated, punitive disciplinary action from possession of weapons or drugs to nonfederally mandated infractions such as disobedience and truancy.36,37 This included state laws that permitted disciplining students for behaviors subjectively assessed as defiant or disruptive to school activities- laws that persist in at least 40 states.7,38 Notably, the literature has not shown these punitive approaches to improve school safety.37

It is well documented that structurally marginalized students have been inequitably targeted by these zero tolerance policies- not only being disciplined more often for subjective behaviors but experiencing harsher discipline.37,39 In particular, this has been shown for Black and American Indian/Alaska Native boys, Black girls, and students with disabilities, with studies suggesting disabled Black or Brown students bear the greatest burden of inequitable targeting.2,7,39,40 With upward of $350 million in Department of Justice funding to hire school-based law enforcement in 2000 and an increasing reliance on calling local law enforcement to school campuses for behaviors such as truancy and bullying, the responsibility of enforcing these changing regulations, a role historically performed by school teachers and administrators, has largely shifted to the purview of the legal system, fueling school to confinement pathways.7,15,35,41

Understanding the role of policy in exposing Black and Brown young people in particular to the legal system in their schools necessitates research on policies that appear to be beyond its scope. For example, Bush's 2001 reauthorization of the Elementary and Secondary Education Act (i.e., No Child Left Behind) was signed into law as a means of holding schools accountable for student achievement. Yet the punitive nature of No Child Left Behind's accountability measures (i.e., "high stakes testing" environment) has since been linked to incentivizing the use of zero tolerance policies in an effort to push out students who performed poorly on standardized exams or were perceived as disruptive to class instruction.7,36 As Mallett notes, while permitting the inequitable distribution of material resources across highly segregated schools to persist, No Child Left Behind earmarked funding for the prevention of drug abuse and violence on school property (i.e., Safe and Drug Free Schools and Communities Act) via state formula grants.36 In keeping with the precedent set by previous legislation, expanding law enforcement in schools was among the activities authorized for use of these funds.34

President Barack Obama's 2015 Every Student Succeeds Act, which replaced No Child Left Behind, authorized the use offederal funds for alternatives to punitive disciplinary action (e.g., restorative justice, positive behavioral interventions and supports) but left decisions to target funding for these alternatives to state- and local-level decisionmakers.42 Moreover, it left in place incentives for school-based policing.34 Since then, legislation such as the Trump administration's 2018 Student, Teachers, and Officers Preventing School Violence Act has continued to authorize federal funding through the Department of Justice to further bolster school- local law enforcement coordination in the name of school safety.43

The Legal System at Home

Finally, the legal system is present in the homes of young people through the incarceration of a household member, systems of legal surveillance, or the criminalization of seeking public safety net services and houselessness. Thus, we use the language of"home" both to imply a physical house and to describe the intimate familial spaces and relational networks to which young people belong.

Estimates suggest that 1 in every 28 children currently has an incarcerated parent44 and 1 in every 14 ever has.45 Parental incarceration disproportionately affects Black and Brown children, with Black children having 7.5 times the risk and Latinx children having 2.5 times the risk ofparental incarceration than do White children.46 With parents serving an average 6.5 years in state prisons and 8.5 years in federal prisons47 built in largely inaccessible rural locations,48 this can lead to extended periods of family separation. As a result, children often either reside with a relative, enter the foster system,46 or become houseless.49 For those experiencing houselessness, interactions with law enforcement are commonplace, particularly for Black and Brown young people.5 When a household member is detained at home, as is the case for individuals facing immigration-related court cases and formerly incarcerated people returning to their communities, the legal system is often physically present in their homes via

systems of surveillance (e.g., electronic monitoring, parole).
The design and implementation of policy has facilitated the legal system's reach into home spaces. For example, the 1997 Adoption and Safe Families Act requires that states begin the process of terminating parental rights if a child has been in foster care for 15 of 22 consecutive months, a time frame that is shorter than most prison sentences served by incarcerated parents.48 Once caregivers have a felony record, they no longer qualify for federal public housing assistance because of restrictions imposed by legislation such as the 1996 Housing Opportunity Program Extension Act.23 In some cases, they also face challenges accessing employment because of federal- and statemandated ineligibility for vocational licenses.23,50 Still other legislation criminalizes seeking public safety net provisions. For example, the 1996 passage of the Personal Responsibility and Work Opportunity Reconciliation Act and the Illegal Immigration Reform and Immigration Responsibility Act has been linked to reductions in access to public benefits, such as health care, among immigrant and noncitizen families over concerns of risking deportation.51 Finally, the criminalization of houselessness manifests through state and local laws prohibiting behaviors such as sitting on public sidewalks and sleeping in public spaces.52 Each of these policy decisions may shape young people's exposure to the legal system and contribute to precarity in their home environments.
In sum, these examples suggest that policy decisions may facilitate the inequitable targeting of structurally marginalized young people across domains of community, school, and home.
Moreover, a single young person may have multiple points oflegal system contact when they wake in the morning, move through their neighborhoods, attend their schools, and return home in evening.
MECHANISMS FOR THE EMBODIMENT OF ILL HEALTH
Having presented policy decisions that may shape the criminalization of young people across domains, we now examine the extent to which their associations with health have been assessed. Whereas an extensive literature documents links between exposure to the legal system within more traditional settings (e.g., current incarceration and health), we focus on domains perceived as outside its traditional purview (i.e., community, school, home). In accordance with ecosocial theory, we then present possible pathways to embodiment-how the material and social environment becomes biologically embedded producing observed distributions of health outcomes13- as proposed by this literature, and we discuss their life course implications.
A briefreview ofthe literature demonstrates that public health researchers have begun examining associations between the legal system and health, with fewer studies focusing on young people specifically. To date, although this literature appears to primarily operationalize exposure to the legal system at the interpersonal level, some studies do explore institutional-level predictors. For example, an analysis ofstate-level E-Verify mandates (i.e., programs for verifying work eligibility piloted under the Illegal Immigration Reform and Immigration Responsibility Act) found that they were associated with a 20% increase in the odds of preterm delivery among infants born to immigrant mothers and a 15% increase among infants of US-born White mothers.53 Notably, E-Verify mandates were enacted in omnibus bills that included legislation permitting law enforcement to obtain immigration status during police stops.53 Most studies, however, look at direct police contact (e.g., legal intervention),28 anticipatory contact (e.g., neighborhood-level surveillance),24 and vicarious contact (e.g., witnessing police stops).28
Health outcomes that have been studied among young people span indicators ofphysical and mental health, including birth outcomes,54 nonfatal injury,55 symptoms of anxiety and posttraumatic stress disorder,28 and death.8 They generally find adverse and inequitably distributed impacts on health. For example, an estimated 57 375 years of life were lost because of police violence in 2015, followed by 54754 years of life lost the following year.8 Although people of color comprised 38.5% of the population between 2015 and 2016, they accounted for 51.5% of all years of life lost, with the greatest burden borne by young people of color.8
Material, psychosocial, and behavioral pathways have been posited to explain how these exposures become embodied as ill health. First, material pathways to embodiment include the loss of economic and other material resources. For example, young people with an incarcerated parent are at a greater risk of household income loss and housing instability,49 both of which have been linked to adverse health outcomes. Second, psychosocial pathways are defined by a physiological stress response to an external stressor. For example, grieving the loss of

an incarcerated caregiver (vicarious contact) and experiencing surveillance (anticipatory contact) have been linked to adverse mental health outcomes.28,56 Third, behavioral pathways occur when young people are pushed into or inadvertently adopt health-harming behaviors in an effort to adapt to and survive exposure to the legal system. This may include externalizing behaviors57 that place them at increased risk of law enforcement officer contact58,59 and pushout of school spaces into sex trafficking.7 Lastly, these material, psychosocial, and behavioral pathways may operate at different points in time: in young people's immediate experiences, accumulating throughout their life course, and across generations.

A recent publication by Gee et al.11 helps us frame time as a life course determinant of health among young people that is patterned by exposure to the legal system. The authors conceptualize time as the biological aging of young people of color and associated morbidity and mortality during the life course that result from experiences of racism as acute and chronic stressors. They provide evidence of how these experiences may be exacerbated by the social aging of young people of color, whereby perceptions of their being older than their chronological age are used as justification for harsher and more frequent contact by the legal system.11

In conceptualizing time as privilege, the authors also discuss how time scarcity is inequitably distributed so that structurally marginalized populations are systematically denied time to pursue healthful lives.11 Geller et al. provide evidence of this in their findings that Black young people are significantly more likely than are their White peers to report stops by police, and these stops are significantly more likely to be intrusive (i.e., involving searches, officer's use of harsh language and racial slurs, and threat and use of physical force).28

Lastly, Gee et al. suggest that because these exposures occur at sensitive and critical developmental periods in early life, this may result in persistent health inequities throughout the life course.11 Transgenerational dimensions of time, whereby young people's lifetime health experiences are affected by previous familial and community exposure to the legal system, are also salient. For example, a federal immigration raid in Postville, Iowa was shown to be associated with a 24% increased risk of low birth weight infants born to USand foreign-born Latina mothers throughout the state,54 indicating both biological and social (e.g., disrupting community processes via incarceration and family separation) transmissions of exposure.

FUTURE DIRECTIONS

Taken together, this literature suggests there may be multiple plausible pathways by which exposure to the legal system becomes embodied as ill health throughout the life course and across generations. It also helps us to frame recommendations for future inquiry (see the box on page S44). Using ecosocial theory's guidance on the cumulative interplay among these pathways and their manifestation across levels (e.g., federal, state, local), domains (e.g., community, school, home), and time (e.g., life S48 Public Health Law PeerReviewed Duarte etai.
course, transgenerationally),13 we encourage future research to assess multidomain exposure to the legal system over time. Additionally, we recommend that future work incorporate CRT as a transdisciplinary theory to frame an understanding of (1) the role of the legal system in US society, (2) the centrality of race and its intersections with other axes of marginalization in structuring this system, and (3) the inequitable distribution of outcomes to which this system has been linked.

Lastly, ecosocial theory's tenet on accountability and agency helps us interrogate both the role that institutions play in shaping pathways to embodiment and researchers' own contributions to the production of knowledge around these pathways.13 Given that the current public health literature on legal system exposure is primarily focused on its interpersonal manifestations (e.g., legal intervention injury), research is needed to explicitly assess how policies shaping inequitable exposure to the legal system may affect health outcomes among young people. In addition to enhancing existing knowledge of these pathways to embodiment, this may serve to inform preventive measures at institutional levels that seek to disentangle carceral structures from the communities, schools, and homes that young people navigate daily.

CONCLUSIONS

Criminal legal system policies at the federal, state, and local levels continue to extend beyond their traditional domains into community, school, and home. Thus, young people's social, economic, educational, and political

mobility may be rooted in a policy context that increasingly disrupts their lives, social networks, and health. By examining macrolevel predictors of inequitable exposure to the legal system, we seek to encourage research aimed at understanding how they may be associated with health among young people.

In so doing, we will be better positioned to devise appropriately targeted institutional-level interventions to reduce exposure, particularly among structurally marginalized young people, to its adverse health effects. >4JPH

Sidebar

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CONTRIBUTORS

C. d. P. Duarte and L. Salas-Hernández conceptualized the study. All authors wrote the essay, provided critical review, and approved the final submission.

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The authors have no conflicts ofinterest to declare.

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DETAILS

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Mass Incarceration as a Social-Structural Driver of Health Inequities: A Supplement to AJPH

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FULL TEXT

Mass incarceration in the United States is a civil rights, human rights, and public health crisis that is the result of social, political, and economic forces, rooted in enduring legacies of slavery and oppression along lines of race and class. We conceptualized this issue because we believe that the theories, methods, and ethical tenets of public health have a distinct role to play in contributing to a growing movement to end mass incarceration and its multilayered harms on health.

A CALL FOR PAPERS

The call for papers for this special issue was broad and necessarily so. We sought articles to add to our understanding ofhow exposures to different structures of the criminal legal system (e.g., law enforcement, jail or prison, community supervision) shape the health of people, families, communities, and society. We reached out to people working in both the trenches and halls of academia for pieces focused on policy, politics, and structurallevel strategies for advancing decarceration and exposing racism in the criminal legal system. We wanted to learn what different public health actors are doing or should be doing to address health inequities related to mass incarceration. Explicit in our call for papers was a focus on how mass incarceration exacerbates racial inequities, and, as such, this is a major focus of many articles in this issue. This is not the first special issue in this journal or others devoted to such topics,1,2 nor should it be the last.

GUIDANCE FOR PUBLIC HEALTH

Drawing on experiences from training programs, Nowotny et al. (p. S18) emphasize the importance of creating training programs for scholars committed to improving health and addressing racial health inequities among people affected by carceral systems. Neher et al. (p. S52) provide researchers with guidance for conducting research in jails and prisons. Wennerstrom et al. (p. S39) describe a collaborative intervention among researchers, formerly incarcerated advocates, and policymakers focused on advancing systemic and programmatic reforms to combat mass incarceration and health inequities in Louisiana. Finally, Heller and Galea (p. S16) explore the role that schools of public health should play in decarceration.

MULTILEVEL IMPACT

Novel to this special issue is the next set of articles that explicitly describe how involvement in the criminal legal system affects multiple facets and levels (e.g., individual, population) of health. In opinion editorials, Jahn (p. S50) describes the value of social- epidemiological frameworks for studying and addressing mass incarcerations harms

on health across ecological levels, and Duarte et al. (p. S43) apply critical race theory and ecosocial theory of disease distribution to examine how policies in the criminal legal system operate to imperil the health ofyoung people of color in their communities, schools, and households. Hayes et al. (p. S21) frame the system of mass incarceration as explicitly undermining the values of reproductive justice, particularly for women of color. Kajeepeta et al. (p. S109) demonstrate a connection between jail incarceration and death in that increases in county jail incarceration rates are associated with increases in county mortality rates. Next, Sundaresh et al. (p. S116) show that exposures to stop and frisks, arrests, and incarceration are associated with lower degrees of physical, mental, social, spiritual, and overall well-being in a nationally representative crosssection of US residents. Nowotny et al. (p. S130) show relationships between rates of jail and prison incarceration and incidence of chlamydia and gonorrhea at a county level. In opinion editorials, Rosen et al. (p. S37) explore the ethical tensions related to using big data to better understand the health impact of mass incarceration, and Prins and Story (p. S35) connect the dots between mass incarceration, health inequity, and climate change.

HEALTH IMPACT OF LAW ENFORCEMENT

An opinion editorial by Duarte et al. (p. S30) summarizes the origins, empirical support, early applications, and future directions for research, policy, and practice stemming from the American Public Health Associations 2018 seminal policy statement that defines law enforcement violence as a public health issue. Bowleg et al. (p. S160) found significant indirect effects of incarceration history on symptoms of depression linked to negative encounters and avoidance of police among Black men in Washington, DC. Camplain et al. (p. S85) show that American Indian/Alaskan Natives and Latino/a residents ofa Southwestern county are more likely to be jailed, convicted, and incarcerated for drug- and alcohol-related offenses than their White counterparts. Lastly, Fehrenbacher et al. (p. S152) link incarceration, experiences ofviolence, and injection drug use among female sex workers in Baltimore, MD, bolstering the case for decriminalization of sex work.

ENVIRONMENTAL

CONTEXTS

Skarha et al. (p. S41) alert us to extreme temperature in jails and prisons, a mounting and often overlooked crisis. Ahalt et al. (p. S27) reflect on the early impacts of a US-Norway exchange intervention designed to transform the culture and values of correctional workforces. Prost and Williams (p. S25) provide guidance for expanding compassionate release policies to avert a looming aging crisis in bloated state prison systems. Finally, Reiter et al. (p. S56) describe the disproportionately high symptoms of depression, anxiety, and self-harming behavior among those who have spent significant time in solitary confinement.

While criminal legal system involvement itself is a sociostructural determinant of health, it also exerts its effects by interacting with other known determinants. Alumni and educators from the Bard Prison Initiative call for expanding educational opportunities for currently and formerly incarcerated people (Fullilove et al., p. S33). Gutierrez and Pettit (p. S123) demonstrate that the uninsured rate declined significantly among recently incarcerated men after implementation of the Affordable Care Act. Finally, Purtle et al. (p. S137) examined local public housing policies on admission and eviction of people with criminal legal system exposure.

COLLATERAL HARMS

Carceral systems harm social relationships and family structures. Knittel et al. (p. S100) examined women's incarceration and number of sexual partners. In Mexico, biomarkers of cardiovascular risk and stress show that incarceration "gets under the skin" of family members of incarcerated persons (Connors et al., p. S71). Widdowson and Fisher (p. S145) examined associations between incarceration and utilization of preventive health care services. Farrell and Gottlieb (p. S78) demonstrate that increased health care coverage is associated with increased utilization-making a case for expanded access. Barnert et al. (p. S63) uncovered the barriers to health care among Latino/a youths. Finally, Goshin et al. (p. S93) surveyed drivers of incarceration stigma among nurses providing care to women.

A BOLD SET OF IDEAS AND DATA

In total, this special issue, which also includes 2 book reviews, represents a bold set of ideas and empirical data that

underscore the harms of the criminal legal system. And, while they are comprehensive and push us toward a better understanding ofthe deep impact on population health, there are still some areas underdeveloped. For instance, missing in this issue are articles focused on cyclical poverty, drug policy, civic engagement, and structural intervention. We hope that this special issue serves as a clarion call that spurs research and action in these areas and beyond to illuminate the harms caused in this era of mass incarceration to individual, family, community, and societal health. ÂfPU

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CONTRIBUTORS

Both authors contributed equally to this editorial.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

Sidebar

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2. Brinkley-Rubinstein L, Randacharan R, Macmadu A, RichJ. Introduction to the special issue of the Journal of Urban Health on incarceration and health. J Urban Health. 2018;95(4):441-443.

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Employment and Health Among Recently Incarcerated Men Before and After the Affordable Care Act (2009–2017)

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ABSTRACT (ENGLISH)

Objectives. To explore whether and how the Affordable Care Act (ACA) affects the relationship between employment and health insurance coverage, health care utilization, and health outcomes among recently incarcerated men aged 18 to 64 years in the United States. Methods. With data from the National Survey on Drug Use and Health (NSDUH), we used a difference-in-differences approach to compare changes in outcomes by employment status among recently incarcerated men. Results. Uninsurance declined significantly among recently incarcerated men after ACA implementation. As the uninsured rate of unemployed men fell below that of their employed counterparts, the ACA helped to fully eliminate the effect of employment on insurance coverage among recently incarcerated men. The employment gap in diabetes widened after ACA implementation as unemployed men saw significant increases in diagnosed diabetes. Employment disparities in hospital visits, diagnosed hypertension, and reported mental illness also declined in the period following ACA implementation, but these changes were not statistically significant. Conclusions. These findings highlight how the ACA, by providing a new route to health care, reduces the confounding forces associated with employment that are linked to both incarceration and health. (Am J Public Health. 2020;110:S123-S129. doi:10.2105/ AJPH.2019.305419)

FULL TEXT

Headnote

Objectives. To explore whether and how the Affordable Care Act (ACA) affects the relationship between employment and health insurance coverage, health care utilization, and health outcomes among recently incarcerated men aged 18 to 64 years in the United States.
Methods. With data from the National Survey on Drug Use and Health (NSDUH), we used a difference-in-differences approach to compare changes in outcomes by employment status among recently incarcerated men.
Results. Uninsurance declined significantly among recently incarcerated men after ACA implementation. As the uninsured rate of unemployed men fell below that of their employed counterparts, the ACA helped to fully eliminate the effect of employment on insurance coverage among recently incarcerated men. The employment gap in diabetes widened after ACA implementation as unemployed men saw significant increases in diagnosed diabetes. Employment disparities in hospital visits, diagnosed hypertension, and reported mental illness also declined in the period following ACA implementation, but these changes were not statistically significant.
Conclusions. These findings highlight how the ACA, by providing a new route to health care, reduces the confounding forces associated with employment that are linked to both incarceration and health. (Am J Public Health. 2020;110:S123-S129. doi:10.2105/ AJPH.2019.305419)

Mass incarceration is a key driver of stratification and inequality in economic outcomes including employment, income, and wealth, and an emerging body of research indicates that it has profound effects on health for formerly incarcerated individuals, their families, and the communities in which they live.1 4 The mechanisms through which incarceration affects health, however, are less well understood. Incarceration is both a correlate and cause ofpoor health outcomes. High rates of criminal justice contact are concentrated in historically disadvantaged communities and among people with high rates of chronic health conditions, such as mental health and substance use disorders, who have limited access to medical care.5 8 Constitutionally mandated access to care for persons while incarcerated contributes to the diagnoses and treatment ofa wide range of communicable and chronic illnesses, theoretically improving health outcomes.9-14 At the same time, high rates of unemployment, low income, and limited access to health insurance are also predictive of comparatively poor health for persons who have experienced incarceration, their families, and the communities in which they live.15-20

Prisons and jails in the United States have become key sites for interventions addressing mental health needs, substance use issues, and routine care for chronic illness.5-7, 20 Correctional facilities are constitutionally mandated to provide minimal health care, and, for some people, prisons and jails have historically been their only sources of medical attention.11-14 Arguments that emphasize the importance of behavior and those that emphasize the structural determinants of health both suggest that low education, unemployment, and low income should be correlated with poor health outcomes among those with criminal justice contact. However, the high correlation between criminal justice contact and other markers of disadvantage, such as low levels of formal schooling,

unemployment, and low income, make it hard to disentangle the mechanisms through which having been incarcerated affects health.

The recent enactment of the Affordable Care Act (ACA) provides a new opportunity to examine the pathways through which incarceration affects health. By establishing new pathways to health insurance outside of the labor market, the ACA disentangles access to health care from not only employment but also other social-structural determinants of health, such as education and income, that are likewise historically important determinants of health insurance coverage.21 Existing studies have found that formerly incarcerated individuals saw significant increases in health insurance coverage and a continued reliance on acute care services in the first 2 years following implementation of the ACA.22 26 Whether these trends have continued in more recent years and the extent to which changes in health insurance and acute care usage vary by employment status remains unknown. Researchers also have yet to provide national estimates on how overall and employment patterns in health outcomes among justiceinvolved populations have changed since the ACA.

To address these gaps in knowledge, we analyzed multiple years of a national, crosssectional survey to explore whether and how the ACA affects the relationship between employment and (1) health insurance coverage, (2) health care utilization, and (3) chronic health conditions among recently incarcerated men. We evaluated the ACA's effect on employment by assessing whether preexisting disparities in the outcomes of interest between employed and unemployed men diminished after implementation of the ACA. The purpose of this analysis was to draw attention to how the ACA influences the relationship between incarceration and health by reducing the importance of employment for outcomes including health insurance coverage, health care utilization, and the diagnosis and reporting of chronic health conditions.

METHODS

We used data from the National Survey on Drug Use and Health (NSDUH) to create our analytic data set. Conducted annually by the Substance Abuse and Mental Health Services Administration, the NSDUH is a nationally representative, cross-sectional survey of the noninstitutionalized US population aged 12 years and older. The sampling frame contains residents ofhouseholds as well as individuals living in noninstitutionalized group quarters and temporary housing units, including halfway houses and homeless shelters.27 We restricted the sample to recently incarcerated men aged 18 to 64 years. Individuals were identified as recently incarcerated if they reported being on probation or parole in the previous 12 months.

The sample consisted ofindividuals drawn from periods before and after implementation ofthe ACA's Medicaid expansion and Health Insurance Marketplace. These policy changes are considered the most comprehensive reforms of the ACA and were expected to make roughly half of the justice-involved population newly eligible for health insurance coverage.24,25,28 Open enrollment for coverage through the Marketplace and expanded Medicaid began in 2013, but the benefits of these programs did not become active until January 1, 2014.29 In view of this unique period and in line with previous research,23 we excluded all 2013 data from our analyses and used the 2009-2012 and 2014-2017 survey years to construct the samples in the pre- and post-ACA implementation periods, respectively.

Measures

Outcome variables. The outcomes of interest included a range of measures intended to capture health insurance coverage, health care utilization, and chronic health conditions. We evaluated health insurance coverage by using a single binary variable to determine whether an individual was uninsured. We classified an individual as uninsured if that individual reported being without health insurance at the time of the interview. We evaluated health care utilization based on the use of acute care services in hospitals and emergency department (ED) settings. Two binary variables indicated whether respondents reported they (1) stayed overnight or longer as an inpatient in a hospital or (2) were treated in an ED during the past 12 months. We examined chronic health conditions by using another series of binary variables that indicated whether respondents reported having ever been diagnosed with (1) diabetes or (2) hypertension and whether they reported having any type of (3) mental illness or (4) substance use disorder during the past 12 months. NSDUH assessed whether respondents had past-12-month substance use disorders

(alcohol use disorders only, illicit drug use disorders only, both alcohol use and illicit drug use disorders, or none) according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria.30 NSDUH assessed whether respondents had any type of mental illness in the past 12 months based on the DSM-IV criteria for having a mental, behavioral, or emotional disorder other than a developmental or substance use disorder.

Key independent variables. The key independent variables were (1) an indicator of the timing of the survey with respect to the ACA's launching of the Medicaid expansion and the Health Insurance Marketplace (1 = surveyyearof2014,2015,2016, or2017, after the ACA implementation; 0 = survey year of2009, 2010, 2011, or 2012, before the implementation), (2) respondents' employment status (treatment group: without fulltime employment; and the control group: with full-time employment), and (3) the interaction term between the indicator ofthe ACA implementation and the employment variable. We determined employment based on how this status confers access to employer-sponsored health insurance. Individuals were identified as having full-time employment if they reported having a job or being enrolled in school or the military on a full-time basis. We refer to the group with full-time employment as employed and to all others as unemployed for the sake of simplicity, but note that the unemployed group includes individuals who reported being employed or enrolled in school or the military on a part-time basis, in addition to those who reported being fully unemployed or not enrolled.

Control variables. To control for the confounding effects of factors related to the outcomes of interest, our analyses adjusted for a battery of individual health and sociodemographic characteristics. These control variables were self-rated health, age, race/ ethnicity, education, household income, and marital status. To help rule out the possibility that unobserved confounders overtime could not account for the observed estimates, all analyses also adjusted for year fixed effects.

Statistica! Analyses

Similar to recent research investigating differential effects of the ACA,21 23 our statistical analyses followed a difference-indifferences (DID) approach. This approach allowed us to determine if preexisting disparities in the outcomes of interest between employed and unemployed men diminished after implementation of the ACA. The statistical validity of the DID approach relies on the assumption that trends in the outcomes of interest were similar (parallel) for both the treatment (unemployed) and comparison (employed) groups before the policy intervention (ACA implementation). We tested this assumption by assessing interactions in the pre-ACA period between the employment indicator and a year-based time variable in regression models estimated for each outcome of interest. These tests (shown in Table A, available as a supplement to the online version of this article at http://www.ajph.org) confirmed that the trends in the outcomes of interest in the pre-ACA period were not significantly different for the employed and unemployed groups.

Implementing a DID approach to compare pre- to post-ACA disparities, we estimated multivariate logistic regression models for each outcome of interest, adjusting for year fixed effects as well as all health status and sociodemographic measures, and including indicators for ACA implementation, employment, and the interaction between ACA implementation and employment. The interaction term was the DID estimator measuring the ACA's effect on disparities in the outcomes of interest between employed and unemployed men. We report regressionadjusted means in the pre- and post-ACA periods for both employed and unemployed men, the disparities in these values in both periods, and the pre- to post-ACA changes in these disparities (the DID estimation) for all outcomes based on the predictive margins of the interaction terms, with all other covariates held at their means. We applied survey weights created by NSDUH analysts to make estimates nationally representative for the noninstitutionalized population, and we adjusted standard errors for the survey's complex sampling design. We used Stata version 15 SE (StataCorp LP, College Station, TX) to conduct the analyses.

RESULTS

Table 1 presents descriptive statistics of sociodemographic and health characteristics for the sample of recently incarcerated men and shows how these traits vary by employment status. We conducted significance testing for comparisons by using the Wald F test. Compared with employed men, unemployed men were significantly more likely to be older, to be Black, and to have lower levels offormal schooling. Household income and marital status also

varied significantly by employment. More than 40% of unemployed men had a household income below 100% of the federal poverty line (as defined by the US Census Bureau in each survey year) while the same was true for roughly 20% of employed men. Nearly 27% of employed men were married compared with 18% of unemployed men. Consistent with their observed
sociodemographic disadvantages, unemployed men were also significantly more likely than employed men to report their overall health status as fair or poor. Table B (available as a supplement to the online version of this article at http://www.ajph.org) compares sociodemographic and health characteristics within each group over time and shows that these traits remained overwhelmingly consistent across the study periods.

Health Insurance

Table 2 shows that the ACA helped to dramatically reduce uninsurance, and it also, notably, helped to completely eliminate the effect of employment on insurance coverage among recently incarcerated men. Among the overall sample of recently incarcerated men, the adjusted uninsured rate declined by 15.4 percentage points, from 42.8% in the pre-ACA period to 27.4% in the post-ACA period. In the pre-ACA period, uninsurance was significantly higher among unemployed men. Uninsurance decreased by 8.0 percentage points among employed men and by 26.0 percentage points among unemployed men, indicating that unemployed men saw substantially larger benefits in coverage from the ACA. The disparity in health insurance coverage among recently incarcerated men fully disappeared in the post-ACA period as the prevalence of uninsurance among unemployed men fell below that of their employed counterparts (25.1% compared with 29.1%), and the difference between these groups was no longer statistically significant.

Health Care Utilization

Table 3 indicates that patterns of hospital stays and ED visits among recently incarcerated men have partially changed following implementation of the ACA but that employment disparities in the use of these acute care services have remained persistent over time. Hospital stays in the overall sample of recently incarcerated men declined significantly from 10.4% in the pre-ACA period to 7.4% in the post-ACA period. ED visits, by contrast, did not change significantly across periods. Consistent with previous employment inequalities in health insurance coverage, hospital stays and ED visits were significantly higher among unemployed men in the pre-ACA period. Although employment differences in health insurance coverage disappeared in the post-ACA period (Table 2), unemployed men remained significantly more likely to have hospital stays and ED visits, and the employment gaps in use ofthese acute care services remained similar over time.

Chronic Health Conditions

Table 4 presents the ACA's effects on several chronic health conditions. In the overall sample of recently incarcerated men, there was a significant decline in diagnosed hypertension (from 9.6% in the pre-ACA period to 6.1% in the post-ACA period), but there were no significant changes in diagnosed diabetes, reported mental illness, or reported substance use disorder. Levels of diagnosed hypertension, reported mental illness, and reported substance use disorder were significantly higher among unemployed men in both the pre- and post-ACA periods, and employment disparities in these chronic health conditions remained similar over time. Employment differences in diagnosed diabetes, by contrast, changed significantly following ACA implementation. In the pre-ACA period, there was not a significant difference in diagnosed diabetes between employed and unemployed men (2.5% compared with 2.9%, respectively). The level of diagnosed diabetes in the post-ACA period remained similar among employed men but increased significantly among unemployed men. As unemployed men became significantly more likely to have diagnosed diabetes, implementation of the ACA was associated with a significant widening of the employment gap in diabetes among recently incarcerated men.

DISCUSSION

We evaluated the ACA's effects on the relationship between employment and health insurance coverage, health care utilization, and chronic health conditions among recently incarcerated US men aged 18 to 64 years. Our results showed that the effect of employment on health insurance among recently incarcerated men fully disappeared following ACA implementation. Unemployed men saw their risk of being uninsured cut in half after implementation of

theACA, and they are now less likely to be uninsured than employedmen. Despite their improved levels of health insurance coverage, we found that unemployed men remained significantly more likely than employed men to use acute care services in hospital and ED settings. With respect to changes in chronic health conditions, we found that the employment disparity in diagnosed diabetes widened significantly in the period following ACA implementation as unemployed men saw a unique increase in their level of diagnosed diabetes over time.We found no significant changes in employment disparities for diagnosed hypertension, reportedmental illness, or reported substance use disorder. Taken together, these findings suggest that employment status no longer determines health insurance coverage among recently incarcerated men in the context of the ACA, but that unemployed men remain disadvantaged in terms of their use of acute care services and chronic health conditions.

Our findings build on recent studies that observed substantial increases in health insurance coverage and persistent use of acute care services among justice-involved populations in the first 2 years following enactment of the ACA.22,23,26 We show that the level of health insurance coverage among recently incarcerated men has continued to increase in the 4 years since ACA implementation (2014-2017) and that improvements in coverage have been largely concentrated among unemployed men. Extending the analysis of previous research,23 we also show that recently incarcerated men have maintained a high level of reliance on acute care in ED settings over time. We contribute new findings to the literature on health care utilization among justice-involved individuals by showing how implementation of the ACA was associated with a significant decline in hospital stays among recently incarcerated men.

We further contribute to work in this area by demonstrating how pre- and post-ACA patterns ofhospital stays and ED visits among recently incarcerated men have varied by employment status. Despite the ACA helping to completely eliminate the effect of employment on health insurance coverage, our results show that the ACA has done little to affect employment disparities in the use of acute care services. Coupled together, these findings suggest that improvements in health insurance coverage have not yet fully translated into better use of health care for this population. Whether and how the ACA affects recently incarcerated men's access to health care more broadly, however, remains unclear. Utilization of health care, including acute care services like those observed in this study, only partially approximate access to care.31 Future work investigating the ACA's influence on the use of health care among recently incarcerated men should consider how other outcomes that tap into health care access, such as the use ofprimary care, are also affected.

We add to existing literature that explores how the ACA affects outcomes among justice-involved populations by investigating several chronic health conditions not yet examined in previous work, to our knowledge. Our results suggest that the ACA led to a significant decline in diagnosed hypertension among the overall population of recently incarcerated men and a significant increase in diagnosed diabetes among those who were unemployed. These results do not necessarily reflect actual changes in the prevalence of these chronic health conditions, however, given that our measures estimate the receipt of a diagnosis from a doctor or other medical provider, which depends on access to and use of care. Accordingly, our findings may reflect changes in health care utilization. Future research should investigate whether patterns in the use of health care explain the significant changes in diagnosed hypertension and diabetes that we observed in this study.

The nonsignificant changes we found in the reporting of mental illness and substance use disorder among recently incarcerated men also warrant further investigation. Existing work shows that the receipt of treatment of substance use disorders amongjustice-involved individuals did not change significantly in the first year following ACA implementation.26 In light of these findings, future studies should explore whether inadequate access to treatment of mental illness and substance use disorder among recently incarcerated men explains their persistently high levels of such chronic health conditions.

Limitations

Although we controlled for available covariates and applied well-established analytic strategies,21 23 it remains possible that there are unobserved factors that could account for some ofthe changes we observed in our outcomes. For example, our results may be subject to biases attributable to significant variation in the implementation of the

ACA over time and across states or may reflect other aspects of the ACA including the dependent care provision. Other historical events, such as spillover effects from the economic recession from 2007 to 2009, might have also influenced the patterns we observed.

Also important to note is that our results reflect an imperfect representation ofrecently incarcerated men in the United States. The NSDUH data identify people who reported being on probation or parole in the past year. Parole is a period of correctional supervision in the community following a prison term; probation is also a period ofsupervision in the community and is generally an alternative to prison but often involves time in jail. Our sample of recently incarcerated men therefore excludes individuals released from prison who were not required to serve time on parole and may include people who serve time on probation but did not spend time in jail. In addition, the residential-based sampling frame of the NSDUH excludes individuals who are homeless or unstably housed, so recently incarcerated individuals who experience residential instability may be underrepresented in our study.

Conclusions

By helping to eliminate the effect of employment on health insurance among recently incarcerated men, the ACA generates important implications for our understanding ofthe relationship between incarceration and health. Previous research has established that the experience of incarceration is negatively associated with a number of health outcomes, although the causal mechanisms linking incarceration to health are a source ofongoing research and debate.11,14,17,18,32 Research has also established that recently incarcerated individuals face a heightened risk of unemployment.3,4,33 Our findings highlight how the ACA reduces the confounding forces associated with employment that have been historically linked to both incarceration and health. Evidence that the ACA has reduced the effect ofemployment on health insurance status for recently incarcerated men suggests that the ACA enables future research to more clearly identify psychosocial and biological pathways or behavioral mechanisms whereby incarceration may have an impact on health outcomes.32

Existing literature on the health consequences of incarceration commonly emphasize the stress-inducing effects of incarceration and the behavioral impacts of incarceration on health.9,10,14,17 Our research draws attention to how connections to institutions-such as the prison system or the labor market-shape health insurance, health care use, and health conditions in ways that complicate the identification of psychosocial and biological or behavioral mechanisms.31,32 Historical patterns of labor market exclusion coupled with contemporary concentrations of criminal justice contact uniquely affect access to health care and health outcomes of Black Americans.1-4,33-35 Future research, therefore, should acknowledge not only how incarceration affects health but also how access to health care may help reduce racial inequalities in health that may be reflected in, and reinforced by, criminal justice contact and system involvement.

CONTRIBUTORS

Both authors were involved in developing the research question and study design, in drafting the original article, and in critical revision of the article for important intellectual content. C. M. Gutierrez performed all statistical analyses and was primarily responsible for analyzing and interpreting the results.

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Note. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

CONFLICTS OF INTEREST

The authors declare that they have no conflict of interest.

HUMAN PARTICIPANT PROTECTION

Our analysis was exempt from human participant review because it fell under the University of North Carolina's policy for research that uses publicly available data sets with de-identified respondents.

Sidebar

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DETAILS

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Incarceration Rates and Incidence of Sexually Transmitted Infections in US Counties, 2011–2016

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ABSTRACT (ENGLISH)

Objectives. To examine rates of sexually transmitted infections as a function of jail and prison incarceration rates across US counties for the years 2011 to 2016. Methods. We used data from several national databases. The outcomes were county-level chlamydia and gonorrhea incidence as reported by the Centers for Disease Control and Prevention (2012-2016). The exposures were lagged specifications of county-leveljailand prison incarceration rates as reported by the Vera Institute of Justice (2011-2015). We estimated mixed models to account for the 3 sources of response variable variation occurring across repeated measures collected from counties nested within states. Results. In the final model, jail and prison incarceration rates were associated with a rate increase of 10.13 per 100000 and 8.22 per 100000, respectively, of chlamydia incidence. The corresponding rate increases for gonorrhea incidence were 2.47 per 100 000 and 4.40 per 100 000. Conclusions. These findings provide some evidence that the documented differences in chlamydia and gonorrhea incidence between counties may be partially attributable to differences in jail and prison incarceration rates. (Am J Public Health. 2020;110:S130S136. doi:10.2105/AJPH.2019.305425)

FULL TEXT

Headnote

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Results. In the final model, jail and prison incarceration rates were associated with a rate increase of 10.13 per 100000 and 8.22 per 100000, respectively, of chlamydia incidence. The corresponding rate increases for gonorrhea incidence were 2.47 per 100 000 and 4.40 per 100 000.

Conclusions. These findings provide some evidence that the documented differences in chlamydia and gonorrhea incidence between counties may be partially attributable to differences in jail and prison incarceration rates. (Am J Public Health. 2020;110:S130S136. doi:10.2105/AJPH.2019.305425)

Structural racism is a key determinant of population health in the United States,1 causing widespread suffering not only for people of color but also for society as a whole.2 One of the major institutional mechanisms that reproduces racial inequality is mass incarceration.3 According to a recent estimate,4 in 2012, a Black man born between 1965 and 1974 without a high-school diploma had a 80.9% chance of ever being incarcerated. Thomas5 argues that historic and contemporary social forces of racial subordination-from slavery to contemporary mass incarceration6-has led to sexual and careseeking behaviors that favor the transmission of sexually transmitted infections (STIs) and, ultimately, the disproportionate documented rates ofSTIs across the US South where these systems of subordination have been concentrated. Thus, it is imperative to examine the contextual factors-poverty, discrimination, Black sex ratios, incarceration rates, and racial segregation-that promote patterns of sexual networks that facilitate transmission of STIs.7,8 This article focuses on the global effects of mass incarceration on incidence of STIs by asking whether the rate of persons admitted to county jails and state prisons is associated with incidence of chlamydia and gonorrhea across US counties net ofpoverty, racial segregation, and Black sex ratios.

CORRELATION FROM INDIVIDUAL-LEVEL STUDIES

The vast majority ofpeople who experience incarceration will return to their community, and it is likely that the postrelease period is a particularly high-risk time for returning citizens.9 In addition to the STI risks experienced before incarceration,10,11 people returning to their communities are likely to engage in behaviors that may elevate their chances of acquiring an STI.12 19 A retrospective cohort study of individuals released from jail documented significantly higher rates of STI for the cohort than in the general population in the 1 year following release.20 Another study found that incarceration ofless than 1 year (e.g., county jail) and more than 1 year (e.g., state prison) were both associated with STIs.21

In addition to the potential negative impact of incarceration on the person experiencing incarceration, the "forced migration" associated with incarceration has socially destabilizing effects on families, attributable to the removal of people from households,22,23 and on communities by undermining social cohesion and control.24 In this way, there may be "spillover" effects associated with mass incarceration for those who are not directly impacted, such as children and romantic and sexual partners.7,25,26 For example, among children, experiencing parental incarceration at an early age is associated with sexual risk during adolescence and young adulthood27 and later STI.28 Race and class inequalities in parental incarceration may contribute to family complexity (e.g., noncustodial parenthood) and the reproduction of childhood disadvantage.29 A higher ratio of women to men may lead to men having more power in opposite-sex sexual relationships, and lower levels of sexual relationship power among women is associated with engaging in riskier sex and having sex with higher-risk partners.30 The gender-ratio imbalance among African Americans attributable, in part, to mass incarceration is a contextual factor leading to increases in behaviors that place Black women at risk.31 Men recently released from prison perceive that they have power to negotiate sex with women,32 and some men who experience serial incarceration perceive relationships with their female partners and children to be complex and difficult to navigate.33

ECOLOGICAL STUDIES

A handful of ecological studies have explicitly examined incarceration and documented infection rates. A study of 100 counties in the US state of North Carolina found that rates of STI (i.e., chlamydia, gonorrhea, syphilis, and HIV) and adolescent pregnancies consistently increased with increasing incarceration rates.34 A longitudinal study of neighborhoods in Atlanta, Georgia, found that census tracts with increasing male incarceration rates experienced a more rapid increase in their rate of newly diagnosed STIs.35 However, census tracts with medium and high baseline male incarceration rates actually experienced a decrease in newly diagnosed STIs over time. Finally, a study of census tracts in San Francisco, California, found a positive association between incarceration rates and chlamydia incidence in women aged younger than 25 years.36 Although not focused on STI, a compelling study by Schnittker et al.37 examined the spillover effects of state-level incarceration rates on the functioning and quality of the health care system. Using state-level panel data, they found that for each percentage-point increase in the formerly incarcerated population, there was a 0.32-percentage-point increase in the uninsured population, and there were around 28 more emergency department visits per 1000 residents.

Taken together, research suggests that geographic areas with a high percentage of incarcerated persons have higher rates of STI not only because persons who experience incarceration are at an elevated risk for acquiring an STI but also because there is something about the geographic spaces where mass incarceration is concentrated (e.g., the disruption of sexual relationships, the change in sexual behaviors), which places everyone in the area at a higher risk whether they have personally experienced incarceration or not.3,22,23 A handful of ecological studies document how living in an area characterized by high levels of incarceration leads to increases in STI in diverse, yet relatively small, geographic spaces (i.e., across counties in North Carolina and across census tracts in Atlanta and San Francisco).

We examined rates ofSTI as a function of jail and prison incarceration rates across US counties for the years 2011 to 2016. This was made possible by the recent release ofa uniquely detailed historical data set of incarceration in both local jails and state prisons that was developed by the Vera Institute of Justice to explicitly examine incarceration at the county level across the United States (see Methods). The findings from this ecological study provide some evidence that the documented differences in chlamydia and gonorrhea incidence between counties may be partially attributable to differences in jail and prison incarceration rates.

METHODS

Data for this study were from multiple sources and were merged by using countylevel Federal Information Processing Standards codes. All variables included single-year estimates for 2011 to 2016, except for urbanicity and segregation, which were time-invariant, and incarceration rates, which were annual estimates for 2011 to 2015. The unadjusted means, medians, and sample sizes are available in Table A (available as a supplement to the online version ofthis article at http://www.ajph.org) for each year for the primary independent and outcome variables, along with the baseline bivariate relationships using Pearson R (Table B, available as a supplement to the online version of this article at http://www.ajph.org). We obtained county-level surveillance incidence rates for chlamydia and gonorrhea for 2011 to 2016 from the Centers for Disease Control and Prevention's (CDC's) AtlasPlus,38 which estimated incidence per 100 000 persons by using population denominators from the US Census Bureau.

County-level incarceration statistics were from the Vera Institute of Justice "In Our Own Backyard" Incarceration Trends (IOB) data set.39 This novel data set was designed to motivate research on incarceration at the local level. Given that county officials-judges, prosecutors, jail administrators-are the primary actors deciding how communities use incarceration, having county-level data allows for more robust studies of the causes and impact of incarceration. Two authors (K. M. N. and M. O.) participated in the inaugural IOB symposium held during 2018. The IOB was collected from several Bureau ofJustice Statistics data sources as well as crime data drawn from the Uniform Crime Report and Census estimates. The most recent year for which data were available was 2015. We used annual estimates of jail and prison admissions for county residents to calculate county-leveljail and prison incarceration rates per 100 000 persons. Jail admissions are most often measured during a midyear week and then multiplied to get an annual estimate. Prison admissions are a count of the number of times people are sent to prison from each county excluding admissions such as returns from court and transfers from other jurisdictions. For more information, see the codebook (https://bit.ly/2ZH4znm) and the methodology report (https://bit.ly/ 2rLg0Oi). We also used the urban designations (urban, suburban, small/mid, rural) as provided in the IOB.

We used Black female-to-male sex ratio and Black-White neighborhood segregation as additional indicators of structural racism. We calculated Black female-to-male population ratios and percentage working age population from the US Census Bureau's file "Annual County Resident Population Estimates by Age, Sex, Race, and Hispanic Origin: April 1, 2010 to July 1, 2017." We measured county-level residential racial segregation by using Black-to-White isolation index scores as calculated by the Brown University American Communities Project.40 The isolation index is a common dimension of racial/ethnic segregation calculated as the minority-weighted average of the minority proportion in a given locale.41 Index scores ranged from 0 (no integration of Blacks with Whites) to 1 (complete integration of Blacks with Whites). In calculating isolation scores, the American Communities Project defined "neighborhood" as a given census tract plus each adjacent tract to account for spatial effects.

The Robert Wood Johnson Foundation County Health Rankings and Roadmaps database provided the remaining

variables. High-school graduation rates represent the estimated proportion of ninth graders that graduate from high school within 4 years. We sourced county-level percentages of children in poverty in the County Health Rankings and Roadmaps from US Census Bureau's Small Area Income and Poverty Estimates. Percentage of working-age population included persons aged 18 to 65 years.

We estimated random effects models for repeated measures data42 with Stata version 15 (StataCorp LP, College Station, TX) to examine the differences across counties that may influence STI incidence. Given the short time period for the study, we did not anticipate unexpected variation or special events that may affect the outcome variable, but we did include a control for time. Given the documented regional variation in STI, we also included a control for US Census region. We adjusted standard errors for state-level clustering. A Breusch and Pagan Lagrangian multiplier test for random effects showed that the data need to be modeled as panel data (%2 = 6575.32; P< .001).

We estimated ordinary least squares models to assess for multicollinearity, including combinations oftotal, jail, and prison incarceration rates, and their interaction with time. The interaction for incarceration and time caused elevated variance inflation factors (> 6.0), so we centered time for use in interactions. After centering time, the mean variance inflation factor was 1.54 with the highest variance inflation factors for urban designation (2.28 and 2.79). We estimated multiple models by using 1- and 2-year time lags for incarceration including total jail or prison incarceration, jail-only incarceration, and prison-only incarceration. The 1-year lagged variable for incarceration means that the outcome is regressed on the incarceration rate for the previous year. We included time lags following Thomas and Torrone's36 ecological examination of whether there is a lag in time between incarceration and a number of community health outcomes among counties in North Carolina. They found the strongest and most consistent correlations for a 1-year lag.

We then estimated mixed models to directly model the random effects for counties and states. We used a model-building approach involving estimating models in a sequential stepwise fashion to properly account for the 3 sources of response variable variation occurring across repeated measures collected from counties that were nested within states.43 We mean centered all continuous control variables in the fixed portion of the models. We used the Akaike information criterion, Bayesian information criterion, and log likelihood ratio to determine the best model fit. The estimation sample for chlamydia with a 1-year lag for incarceration rates included 10 003 total observations across 5 years nested within 2439 counties, nested within 44 states (81.2% of US counties). For gonorrhea, the estimation sample was 9995 over 5 time years nested within 2437 counties nested within 44 states. Counties were missing if they did not have reliable estimates for the study variables. We used 6 years of data to estimate the 5 time points (incarceration rates were from 2011 to 2015; STI and other variables were from 2012 to 2016). The estimation sample for a 2-year lag was smaller because it only included 4 years of data.

RESULTS

Across counties, a 1-standard-deviation increase in total incarceration was associated with an increase of 12.19 new cases of chlamydia per 100 000 persons net of relevant county-level demographic factors and other indicators of structural racism (Table 1). This represented a 4.89% increase from the model average of 249.22 per 100 000 chlamydia incidence. When we lagged incarceration rates by 2 years-incarceration rates predicted the rate increase in chlamydia incidence 2 years later-the estimate was 8.81 per 100 000. A different specification of total incarceration rates found that a 10% increase from the mean incarceration rate was associated with a 3.94 per 100 000 increase in chlamydia incidence the following year, with 95% of counties experiencing a 10% increase in total incarceration showing between 1.95 and 5.93 per 100 000 increase in chlamydia incidence. The corresponding rate for a 20% increase in total incarceration was 6.96 (95% confidence interval [CI] =3.45, 10.47) per 100 000. Table 1 also shows incarceration rates disaggregated by jail and prison. The rate increases of chlamydia incidence for a 1-standard-deviation increase in jail incarceration were 10.98 using a 1-year lag and 7.96 using a 2-year lag. For prison incarceration rates, the corresponding rate increases were 8.79 per 100 000 and 8.19 per 100 000.

The random effects models for gonorrhea indicated that a 1-standard-deviation increase in total incarceration was associated with a 3.03 per 100 000 rate increase in gonorrhea incidence the following year representing a 9.36%

increase from the model average of 32.39 (Table 1). The 2-year lagged total incarceration rate was associated with a 3.31 per 100 000 rate increase. A 10% increase in total incarceration was associated with a 1.18 per 100 000 (95% CI = 0.52, 1.83) rate increase from the mean gonorrhea incidence the following year, with a 20% increase corresponding to a 2.15 per 100 000 (95% CI = 0.94, 3.36) rate increase. When we disaggregated total incarceration into jail and prison incarceration, we found that prison incarceration had a stronger association with gonorrhea incidence.

The best-fitting mixed models are presented in Table 2. The models used for model building are available in the Tables C and D, available as supplements to the online version of this article at http://www.ajph.org). The fixed effects in model 1 indicated that both jail (10.11/100 000) and prison (7.06/100 000) incarceration were associated with higher chlamydia incidence, on average, across US counties, and that chlamydia incidence, overall, has increased over time (11.21/ 100 000). The rate increase of chlamydia incidence per a standard deviation increase in jail incarceration reflected a 4.27% increase in chlamydia incidence from the model average for counties. The corresponding rate increase for prisons was 2.69%. The fixed effects in model 2 indicated that counties with higher jail and prison incarceration rates have higher incidence of gonorrhea (2.47/100 000 and 4.40/100 000, respectively) and that, on average, gonorrhea incidence has increased by 6.49 per 100 000 each year from 2012 to 2016. The rate increases represented a 4.39% and 7.81% increase over the model average gonorrhea incidence for jail and prison incarceration, respectively.

Overall, the fixed-effects estimates from the mixed models were similar to the estimates found in the random-effects models. However, the random effects in the mixed models provided additional insights. First, there was more variation in STI incidence between counties than within counties over time. Second, there was substantial heterogeneity across counties and states that was unexplained by the model. The final model specification for chlamydia decreased the county-level variation in STI by 54.78% across counties and 68.07% across states. The corresponding numbers for gonorrhea were 72.43% for county-level variation and 93.85% for state-level variation. The model covariates accounted for a lot of the variation, but not all.

DISCUSSION

We used a mixed-model approach to examine the relationship between STI incidence and total incarceration rates-and incarceration disaggregated into county jail and state prison incarceration-at the county level from 2011 to 2016. The findings showed that counties with higher rates of incarceration have higher incidence ofboth chlamydia and gonorrhea and that both jail and prison incarceration were independently associated with rate increases in STI. We accounted for time-order by using lagged specifications for incarceration, strengthening the argument for a potential causal relationship. Disaggregation of incarceration data showed that chlamydia rates were most strongly associated with jail incarceration rates, and gonorrhea rates were most strongly associated with prison incarceration rates. Overall, these findings provide some evidence that the effects of mass incarceration are manifest at the population level across US counties and suggest possible "spillover" effects associated with mass incarceration for those who are not directly impacted. There was, however, substantial variation in the association between incarceration and STI incidence over time and across counties and states, net of relevant demographic factors (e.g., poverty) and other measures of structural racism (i.e., Black female-to-male sex ratio, Black- White segregation).

Strengths and Limitations

The strength of this study was the inclusion of counties from across the United States. However, there were several data limitations. First, chlamydia and gonorrhea estimates reflect the minimum likely incidence rates, because not all infections are diagnosed and reported to national surveillance systems. Data from the CDC indicate state-level variation in chlamydia screening rates, with southern states having the lowest rate of screening.44 This suggests regional variation in screening practices. Although estimates for screening are not available at the county level, the state-level adjustments included in the models helped to account for this variation. In fact, including a random effect for states in the mixed models greatly reduced the variation in STI among counties (Tables C and D).

Related, reporting and surveillance practices differ between and within states, so national reporting data are incomplete.38 Although all diagnoses are impossible to ascertain, it is estimated that 40.3% and 32.2% of chlamydia

and gonorrhea cases are undiagnosed, respectively.45 As chlamydia is often asymptomatic, trends in the number of diagnosed cases may be influenced by trends in incidence of infections or in diagnostic, screening, and reporting practices. Therefore, our findings are likely an underestimation. The ecological fallacy would be to infer from our findings that incarceration leads to higher STI incidence. Given the absence of individual-level data, it is impossible to conclude that incarceration causes infection with sexually transmitted diseases.

There are also limitations associated with the other county-level variables. For example, the estimation of high-school graduates may vary across states because of suppression requirements and classification and inclusion rules for marked groups.46 Finally, the incarceration and STI data are not sex- and race/ethnicity-specific. Future research should model the impact of incarceration on disparities directly or for the health of Black people, specifically, across different geographic spaces.

Public Health Implications

Our study supports the growing body of research examining the complex relationship between mass incarceration and STI. Previous studies have found, for example, that, for women, dating a man who has been incarcerated is positively associated with ever having an STI, infection with an STI is associated with a personal history of incarceration, incarceration disrupts partnerships and ends romantic and sexual relationships, and previously incarcerated people have increased relative risk for chlamydia and gonorrhea.12,20,21 Our findings reinforce the need to move beyond the individual to examine how mass incarceration creates conditions that favor disease transmission, similar to a handful of other studies. These studies document how living in an area characterized by high levels ofincarceration leads to a more rapid increase in new STI diagnoses in diverse, yet relatively small, geographic spaces (e.g., a single state or city).34 38

The enormous scale of imprisonment for Black men is undeniable, and recent scholarship identifies contemporary criminalization and incarceration as an important representation of structural racism.6,47,48 Community harms resulting from incarceration create a social dynamic that increases the negative consequences to those who are removed from and later returned to specific neighborhoods in concentrated numbers.3 Concentrated imprisonment further damages the social bonds that sustain life, especially for poor communities, as incarceration removes the benefits that individuals bring to their familial networks such as providing money, childcare, and emotional support and benefits to their larger social networks including social capital.49 That is, imprisonment was once a concern that affected the individual, but the scale of incarceration today is such that the effects are felt much more broadly and can be detected globally at the population level, as suggested by the findings in the present study. Simply put, without personally experiencing incarceration or having personally engaged in high-risk sex or other behaviors, people may still suffer the consequences from residing in, and forming relationships within, a community structure that fosters unequal opportunity for healthy behaviors because of mass incarceration.

We argue that a multilevel and multisector approach is needed to ameliorate the deleterious health effects of mass incarceration. For example, implementation research to develop an integrated health care model between the state- and county-level justice and public health systems would help communities to frame criminal justice policy as health policy. This collaboration could also support screening and treatment during the reintegration period, which may be crucial for decreasing new STI cases. Finally, findings from this ecological approach have important implications for directing limited national health resources to areas with high incarceration rates to geographically focus prevention interventions and provide improved access to STI services in these areas both within and outside correctional spaces.

CONTRIBUTORS

K. M. Nowotny originated the article and contributed to all aspects of the article. M. Omori contributed to the analysis and the interpretation of the findings. M. McKenna and J. Kleinman contributed to the framing of the article including the literature review and the Discussion section.

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CONFLICTS OF INTEREST

The authors report no conflicts of interest.

HUMAN PARTICIPANT PROTECTION

This research did not involve human participants and was thus exempt from institutional board review.

Sidebar

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Strategies to Optimize the Use of Compassionate Release From US Prisons

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ABSTRACT (ENGLISH)

Adults aged 50 years or older constituted 10% of the US prison population in 2012 and 20% in 2017.1 Many factors have contributed to the aging ofthe prison population, including reduced judicial discretion (e.g., mandatory minimum sentences, three strikes legislation), indeterminate sentencing, and the reintroduction of life without parole.2 As many incarcerated older adults experience multiple physical and mental health conditions at higher rates than do nonincarcerated persons,2 prison yards are now peppered with walkers, wheelchairs, and other durable medical equipment. Incarcerated older adults are also vulnerable to predation and often live in environments not designed to meet their physical needs.3 As a result, older adults generate high costs for overcrowded correctional systems, many of which are ill suited to provide the complex medical care needed for patients of advanced age or approaching the end of life. In response to the aging of the prison population, many jurisdictions have introduced or reinvigorated legal mechanisms to release or parole people with life-limiting illness early to their communities.4 Nearly all states have some form of early release policies,4 including medical parole, medical release, and geriatric parole, to name a few (all herein referred to as compassionate release). Such mechanisms are critical release valves for bloated US correctional facilities and can serve as supportive, human rights-oriented strategies for unifying families at the end of life and transferring persons to community-based health care systems that are better equipped to meet their complex health needs.

Despite the existence of compassionate release policies, a recent analysis paints a bleak portrait of their use.4 Only 4% of requests in the Federal Bureau of Prisons are granted, and anecdotal evidence points to similarly low rates among many state prison systems,4 indicating underuse of these mechanisms as an important approach to decarceration. The limited use of compassionate release is driven by numerous systemic barriers at the patient, professional, and policy levels. We describe these barriers and strategies to combat them and promote human dignity and decarceration among this medically vulnerable population.

FULL TEXT

Adults aged 50 years or older constituted 10% of the US prison population in 2012 and 20% in 2017.1 Many factors have contributed to the aging ofthe prison population, including reduced judicial discretion (e.g., mandatory minimum sentences, three strikes legislation), indeterminate sentencing, and the reintroduction of life without parole.2 As many incarcerated older adults experience multiple physical and mental health conditions at higher rates than do nonincarcerated persons,2 prison yards are now peppered with walkers, wheelchairs, and other durable medical equipment. Incarcerated older adults are also vulnerable to predation and often live in environments not designed to meet their physical needs.3 As a result, older adults generate high costs for overcrowded correctional systems, many ofwhich are ill suited to provide the complex medical care needed for patients of advanced age or approaching the end of life.2,3

In response to the aging ofthe prison population, many jurisdictions have introduced or reinvigorated legal mechanisms to release or parole people with life-limiting illness early to their communities.4 Nearly all states have some form of early release policies,4 including medical parole, medical release, and geriatric parole, to name a few (all herein referred to as compassionate release). Such mechanisms are critical release valves for bloated US correctional facilities and can serve as supportive, human rights-oriented strategies for unifying families at the end of life and transferring persons to community-based health care systems that are better equipped to meet their complex health needs.

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4% of requests in the Federal Bureau of Prisons are granted, and anecdotal evidence points to similarly low rates among many state prison systems,4 indicating underuse of these mechanisms as an important approach to decarceration. The limited use of compassionate release is driven by numerous systemic barriers at the patient, professional, and policy levels. We describe these barriers and strategies to combat them and promote human dignity and decarceration among this medically vulnerable population.

BARRIERS TO THE USE OF COMPASSIONATE RELEASE

Barriers to the use of compassionate release are multisystemic. These include challenges at the patient, professional, and policy levels.

Patient-Level Barriers

Some persons who are eligible for compassionate release are unaware of the policies or incorrectly believe that they are ineligible.5 In a survey of medically complex patients across three geographically disparate prisons and jails, 43% of respondents lacked the knowledge necessary to apply for compassionate release, and 75% indicated they would apply if eligible.5 Limited health literacy and inadequate social support can also pose barriers to applying for compassionate release in the many prisons where formal assistance is lacking.5 In addition, perceptions that patients distrust correctional health care professionals (whether correct or incorrect) can impair clinicians engagement in difficult conversations about serious illness and prognosis.5

Professional-Level Barriers

Application for, and use of, compassionate release policies is often contingent on having a limited prognosis as established by a physician. However, prognostication is a complex endeavor even for trained professionals.6 It is common for physicians to overestimate prognosis, and many hesitate to provide a prognosis at all.6 Fear of litigation may also permeate conversations about lifelimiting illness and release, as some clinicians worry about the legal consequences of releasing a person who lives beyond the expected timeframe.7 Lack of knowledge about serious and terminal illness among parole board members can also pose a barrier if the board does not possess sufficient medical knowledge to understand the trajectory of serious illness.6

Profound barriers to discharge planning also exist.7 Few jurisdictions provide adequate discharge plan development, despite more than half of compassionate release policies requiring that robust plans be in place before release.4 In addition, difficulty identifying appropriate postrelease housing is common, as many long-term care settings are reluctant to accept persons released from prison.

Policy-Level Barriers

Many policy barriers to compassionate release exist, including narrow eligibility requirements.4,6 For example, numerous jurisdictions require patients to be of a certain age orto have served a specified portion of their sentence to qualify. Other jurisdictions may exclude persons based on specific charges.4 Some states dictate specific prognoses (e.g., having 6 months remaining to live)4 despite the scientific limitations of precise prognostication.6 Unclear or profoundly complex application processes and narrow application and appeal deadlines can also impede the process.4 Political barriers exist, as well. Policymakers' retributive stance and desire to appear "tough on crime"3 to their constituents may discourage policies and practices that lead to the release of those convicted of crime.

RECOMMENDATIONS TO OVERCOME BARRIERS

Recommendations must be similarly multifaceted to curtail the many barriers to compassionate release. Research, education and training, and policy revision are essential to the promotion of human dignity and decarceration for persons seeking compassionate release.

Enhanced Research and Transparency

Research regarding barriers to the application and use of compassionate release policies is in its infancy. Investigations are needed to understand the drivers of public sentiment on compassionate release, parole board and correctional decision-making, and disparities in release outcomes. Mandated reporting of eligibility, application, and release under these mechanisms also

could be an important first step toward better understanding strategies to accelerate and expand compassionate

release, as well as to identifying potential disparities in their application (e.g., according to gender and race).4

Education and Training

System-wide education and training are essential to increasing widespread use of compassionate release policies. Such interventions should target patients, correctional health care professionals, parole board members, and other key decision-makers in correctional facilities. Although the First Step Act (Pub L No. 115-391; 2018) requires federal institutions to communicate the availability of compassionate release and provide application assistance to patients, parallel efforts are needed at the state level.4 Eligibility and application information should be included in handbooks and in prison and jail libraries.4 Correctional health care professionals should also be knowledgeable about their jurisdiction's compassionate release policies and procedures. Efforts to increase public awareness of this issue are also critical, as constituents can shape decisionmaking through advocacy.

Policy Change

Revising existing policies to include "life-limiting illnesses" or "debilitating" conditions rather than relying on prognostic certainty may help health care professionals feel more comfortable supporting applications for compassionate release.6 On a policy level, reducing minimum age or years served requirements (e.g., requiring completion of 75% of one's sentence or 10years, whichever is shorter) would increase access to compassionate release.6 Removing charge-related exclusions and introducing

shorter, time-sensitive deadlines with mandated agency response to reduce delays are also needed,4 and the availability of pro bono counsel may be required for some patients when administrative outlets have been exhausted.4

It is important to note that even with significant policy and procedural changes, many patients will not qualify for release or will not be released in a timely manner. For these patients, it is essential that palliative care be optimized in prisons and that there be a focus on promoting human dignity among those with life-limiting illness in these settings.2

CONCLUSIONS

With the rapid aging of the prison population, compassionate release has become an important tool that can be used to achieve a humane, dignity-driven response to mass incarceration. For patients who have a viable release plan for housing and medical care, identifying and overcoming patient-, professional-, and policy-level barriers to the use of compassionate release comprise an important step toward reckoning with and rectifying the harms of mass incarceration and are critical to advancing a rational public health approach to the care of an aging prison population. >4jPI-l

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Sidebar

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CONFLICTS OF INTEREST

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Incarceration and Number of Sexual Partners After Incarceration Among Vulnerable US Women, 2007–2017

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ABSTRACT (ENGLISH)

Objectives. To examine whether women's incarceration increases numbers of total and new sexual partners. Methods. US women with or at risk for HIV in a multicenter cohort study answered incarceration and sexual partner questions semiannually between 2007 and 2017. We used marginal structural models to compare total and new partners at visits not following incarceration with all visits following incarceration and visits immediately following incarceration. Covariates included demographics, HIV status, sex exchange, drug or alcohol use, and housing instability. Results. Of the 3180 participants, 155 were incarcerated. Women reported 2 partners, 3 or more partners, and new partners at 5.2%, 5.2%, and 9.3% of visits, respectively. Relative to visits not occurring after incarceration, odds ratios were 2.41 (95% confidence interval [CI] = 1.20, 4.85) for 2 partners, 2.03 (95% CI = 0.97, 4.26) for 3 or

more partners, and 3.24 (95% CI = 1.69, 6.22) for new partners at visits immediately after incarceration. Odds ratios were similar for all visits following incarceration. Conclusions. Women had more total partners and new partners immediately and at all visits following incarceration after confounders and loss to follow-up had been taken into account. (Am J Public Health. 2020;110:S100-S108. doi:10.2105/AJPH.2019.305410)

FULL TEXT

Headnote

Objectives. To examine whether women's incarceration increases numbers of total and new sexual partners. Methods. US women with or at risk for HIV in a multicenter cohort study answered incarceration and sexual partner questions semiannually between 2007 and 2017. We used marginal structural models to compare total and new partners at visits not following incarceration with all visits following incarceration and visits immediately following incarceration. Covariates included demographics, HIV status, sex exchange, drug or alcohol use, and housing instability. Results. Of the 3180 participants, 155 were incarcerated. Women reported 2 partners, 3 or more partners, and new partners at 5.2%, 5.2%, and 9.3% of visits, respectively. Relative to visits not occurring after incarceration, odds ratios were 2.41 (95% confidence interval [CI] = 1.20, 4.85) for 2 partners, 2.03 (95% CI = 0.97, 4.26) for 3 or more partners, and 3.24 (95% CI = 1.69, 6.22) for new partners at visits immediately after incarceration. Odds ratios were similar for all visits following incarceration. Conclusions. Women had more total partners and new partners immediately and at all visits following incarceration after confounders and loss to follow-up had been taken into account. (Am J Public Health. 2020;110:S100-S108. doi:10.2105/AJPH.2019.305410)

Approximately 219 000 women are currently incarcerated in the United States, and nearly 3 times that number are on parole or probation.[1,2] Womens incarceration has increased by 823% since the 1980s[1] and has continued to rise despite recent decreasing incarceration rates among men nationally.[2] The massive increase in womens incarceration has not been evenly distributed across the US population; women involved in the criminal justice system are more likely to be poor, to be non-White, and to have histories of physical and sexual trauma and substance use.[3,4]

Women with histories of incarceration bear a disproportionate burden of sexually transmitted infections (STIs), including HIV, and report higher numbers of sexual partners, more sex exchange, and increased frequencies of concurrent sexual partners relative to women who have never been incarcerated.[4-8] Although others have described the multiple shared pathways involving jails or prisons and sexual risk behaviors, such as engagement in sex exchange and drug use, both the social ecological framework and network theory suggest mechanisms through which incarceration itself may function as a structural force altering a womans risk for STIs.[4,9,10] The social ecological model demands an analysis of structural factors; network theory extends this, specifying that STIs in particular must be studied in the context of sexual networks, as a womans risk is directly affected by her partners (or partners) risk level as well as the structural and community factors that constrain her sexual network formation.[9,11] Incarceration is a structural force with specific collateral consequences for women and potential implications for STI and HIV risk. Many women involved in the criminal justice system cycle experience extended periods of engagement with community supervision while on parole or probation, punctuated by repeated short periods of incarceration.[4,12] At reentry into the community, women often experience challenges with economic self-sufficiency after job or housing loss, and previously economically supportive relationships may have ended owing to incarceration.[13] This increased economic vulnerability and financial dependence may result in increased engagement in sex work or a reliance on informal transactional relationships, with associated heightened risks of sexual violence and condomless sex.[13 15]

Earlier work has shown associations between women's incarceration and risk for HIV and STI due to high-risk partners.[16] Women who have been incarcerated are more likely to report having multiple sexual partners than women who have never been incarcerated, although some of this effect is explained by drug use.[17,18] Arrest and incarceration in the past 6 months have been associated with having multiple partners and sexual partners who inject drugs or are known or suspected to be living with HIV.[15] The mechanisms underlying these associations are

less clear and may mirror the relationship disruption and concentration of risk in networks due to imbalanced sex ratios and decreased availability of lower-risk partners that affect incarcerated men's sexual networks.19,20
The relationships between incarceration, high-risk sexual behavior, drug use, and sex exchange are complex, and studies attempting to build a causal connection between incarceration and sexual network structure have been limited by geographically specific samples, cross-sectional designs, and confounding.15,17,18 Our aim was to examine the effects of women's incarceration on the numbers of total and new sexual partners, accounting for the important confounding factors of sex exchange, housing instability, and drug use. Guided by the social ecological framework and network theory, we hypothesized that incarceration would result in more total and new sexual partners, likely because of changes in social circumstances and sexual networks.

METHODS

The Women's Interagency HIV Study (WIHS) is a geographically diverse, multicenter cohort study ofwomen living with or at risk for HIV; recruitment, retention, and participant characteristics have been described elsewhere.21 Since initiation of the cohort in 1993, women 25 to 60 years of age have been recruited in 4 waves and participate in biannual study visits. Eligibility criteria have been similar across waves. HIV-seronegative women were eligible for the study ifthey had at least 1 high-HIV-risk exposure in the preceding 5 years (STI diagnosis; sex without a condom with 3 or more men; sex with a condom with 6 or more men; trading sex; sex with an HIV-seropositive man; injection drug use oruse of crack cocaine, cocaine, heroin, or methamphetamine; or any partner with these risk characteristics). Incarceration questions were added to the WIHS in October 2007, and a question about new sexual partners was added in October 2013.

Eligibility

Women in the WIHS were eligible for this analysis if, between October 2007 and September 2017, they had 3 consecutive visits without an incarceration episode and at least 1 subsequent visit. One ofthe 3 visits could be a missed visit, and we assumed that women were not incarcerated at missed visits unless the study staff noted that the visit was missed because of incarceration based on information from the participant. Women who died or missed 2 consecutive visits (loss to follow-up) were treated as censored at the last attended visit. Administrative censoring was applied such that women could contribute a maximum of 10 visits to the analysis. Inclusion of more than 10 visits for each woman led to extreme weight distributions (indicating a possible lack of positivity), in part because women recruited into the WIHS in the latest wave could not contribute more than 10 visits.
Overall, 3180 women met the inclusion criteria and contributed 26 890 visits, of which 97.9% (n = 26 351) were nonmissed visits. Because the Los Angeles site was discontinued in 2013, analyses focusing on the new sexual partner outcome did not include participants from that site. Women consented to use of their data as part of their overall WIHS participation.

Measures

The exposure variables were based on reporting yes or no to being incarcerated in a prison or a jail in the preceding 6 months. Study staffindicated visits missed as a result of incarceration. In addition, participants were asked at baseline whether they had previously been incarcerated.
Women responded to a question about the total number of male partners with whom they engaged in vaginal, oral, or anal sex in the preceding 6 months. Because the distribution ofpartners was substantially zero and 1 inflated, and because many women rounded their responses, we categorized the outcome into no partners, 1 partner, 2 partners, and 3 or more partners in the preceding 6 months. The distribution of new sexual partners was also zero inflated, and few women indicated having more than 1 new sexual partner in the preceding 6 months. Thus, we used a dichotomous variable indicating no new partners or 1 or more new partners in the preceding 6 months.
Sociodemographic data included age at each visit and race, coded as Black, White, or other. We classified women at their first visit as enrolled in Bronx, NY; Brooklyn, NY; Washington, DC; San Francisco, CA; Los Angeles, CA; Chicago, IL; Chapel Hill, NC; Atlanta, GA; Miami, FL; Birmingham, AL; or Jackson, MS. The 2 New York sites were grouped, as were the southern sites (North Carolina, Georgia, Florida, Alabama, and Mississippi). We dichotomized level of education as completion of less than high school or at least high school. Baseline HIV status was used; 4

women who seroconverted during the study period were considered HIV seronegative. Housing instability was updated at each visit. A woman was considered unstably housed if she reported living in a rooming, boarding, or halfway house; in a shelter or welfare hotel; or on the street.

Sex exchange was assessed at each visit with a question asking whether the respondent had had sex for drugs, money, or shelter in the preceding 6 months. We included 3 substance use variables: hard drug use (crack cocaine, cocaine, heroin, methamphetamines, other opioids, or any injection use), alcohol use (none, 1-7 drinks per week, or more than 7 drinks per week), and marijuana use.

Missing Data

We filled in missing data for alcohol, marijuana, and hard drug use; sex exchange; and unstable housing (3.9%-5.5% of visits) by carrying forward the most recent value (data were carried backward from the nearest subsequent value if there were no prior visit data). Missing data on incarceration status (4.8%-5.6% ofvisits), history of incarceration (2.0%-2.7% of visits), and the categorical sexual partner variable (6.0%-6.9% of visits) were multiply imputed (the proportion of missing data by variable is shown in Table A, available as a supplement to the online version of this article at http://www.ajph.org).

We conducted multiple imputation via fully conditional specification for both continuous and categorical variables. The imputation model was as rich as the analytic models and included alcohol, marijuana, and hard drug use; sex exchange; and unstable housing as time-varying predictors and WIHS site, age, HIV status, education, and race as baseline predictors. The weight and analytic models described subsequently were conducted independently with each of 30 multiply imputed data sets, and results were combined via Rubin's method.22 Although multiple imputation has limitations, including reliance on a missing at random assumption, the proportions of missing data are relatively small.

Statistical Approach

Estimation of the effect of a time-varying exposure on bivariate or multivariate outcomes traditionally relies on generalized logistic regression to model the odds of the outcome at a given time as a function of past exposure history. This approach may be biased if there are time-dependent covariates that both are risk factors for the outcome and predict subsequent exposure and if past exposure history predicts the risk factors. Marginal structural models are estimated via inverse-probability-of-treatment weights (IPTWs) to appropriately adjust for timedependent confounders affected by earlier exposures.23 When correctly specified, IPTWs create a pseudo-population wherein any confounding based on covariates included in the weight model has been eliminated (Figure A, available as a supplement to the online version of this article at http:// www.ajph.org). The final weighted model uses only the exposure and time to predict the outcome, as confounders are controlled for with the IPTWs, and provides unbiased estimates ofthe marginal effect ofthe exposure. Because incarceration (time-varying exposure) could affect the time-varying confounders (e.g., unstable housing), we chose to estimate a marginal structural model. We selected covariates for the weight and analytic models based on the criminal justice and sexual behavior literature: baseline age,24,25 race,26,27 educational attainment,25,28 HIV status,6,29 WIHS site,1,30 and prestudy incarceration.7 We also used the following time-varying covariates: housing instability,30,31 sex exchange,7 drug and alcohol 32,33 use, and prior incarceration.

We defined 2 incarceration exposures. First, we specified that a woman stayed in incarcerated status once she had become incarcerated for the first time during the study period; this exposure (exposure 1) captures the effects of an incarceration at all visits afterward. Second, we specified that a woman could report incarceration in the preceding 6 months at one visit but could switch back to nonincarcerated status at her next visit; this exposure (exposure 2) captures the immediate effect of incarceration. We measured our outcomes at the visit following that in which we measured the exposure to separate them temporally with certainty.

To control for confounding, we created inverse-probability-of-treatment weights for exposures 1 and 2. For each exposure, 2 pooled logistic regression models were fit to obtain predicted probabilities for the numerators and denominators of the treatment weights. Time in all of the models was specified in visits via 3-knot restricted quadratic splines. For the numerator of the weights, pooled logistic regression models were fit predicting exposure

based on time in visits. For the denominator of the weights, pooled logistic regression models were fit predicting exposure based on time in visits, baseline covariates, time-varying covariates from the 2 visits prior to the exposure, the outcome from the 2 prior visits, and, for exposure 2 only, the exposure from the 2 prior visits (to preserve temporality). The exposure 1 models incorporated visits up to and including each woman's first incarcerated visit during the study period, and the exposure 2 models included all eligible study visits.

We used stabilized inverse-probabilityof-censoring weights to control for potential nonrandom loss to follow-up. We used pooled logistic regression for the numerators and denominators of the weights, both of which represented a woman's probability of not being censored at a given visit. We included in the denominator model the same covariates as in the models for the treatment weights, except that the current exposure, covariates, and outcome were included in the censoring weights for both exposures.

We calculated the conditional treatment or censor weight for a single visit by taking the ratio of the predicted probabilities of the observed treatment (or censor status) at that visit. The final IPTWs and inverse-probability-of-censoring weights at visit i were created by multiplying each ofthe conditional treatment or censor weights from a women's first visit through visit i and then multiplying the IPTW and inverse-probability-of-censoring weights for visit i. We examined the distributions of the weights combined across all visits as well as at each visit to confirm that the means of the weights were close to 1 and that there were no extreme weights (Appendix A, available as a supplement to the online version of this article at http://www. ajph.org).

We estimated the effects ofincarceration on the number of total and new male sexual partners using weights to address timevarying confounders (time, housing instability, sex exchange, drug and alcohol use, and, for exposure 2, prior incarceration), baseline confounders (age, race, educational attainment, HIV status, WIHS site, and prestudy incarceration), and informative censoring. In the case of 30 multiply imputed data sets for each model, we fit a weighted, generalized logit model for each exposure predicting the categorical number of total male sexual partners with a reference level of 1 partner and exposure and time in visits as predictors. We also fit weighted logistic regression models for each exposure predicting the number ofnew sexual partners with a reference level of no new partners and exposure and time in visits as predictors. For all models, we used weighted generalized estimating equations to obtain robust standard error estimates, accounting for within-subject correlations. For each model, results were pooled across the data sets. Analyses were conducted with SAS version 9.4 (SAS Institute Inc, Cary, NC).

RESULTS

Baseline characteristics are shown in Table 1. The median age at the start of the study was Note. The contents of this article are solely the responsibility ofthe authors and do not necessarily represent the official views of the National Institutes of Health.

CONFLICTS OF INTEREST

A. A. Adimora has received consulting fees from Merck, Viiv, and Gilead, and the University ofNorth Carolina has received funds from Gilead for her research. The other authors declare no conflicts of interest.

HUMAN PARTICIPANT PROTECTION

Women consented to the use oftheir data as part oftheir overall Women's Interagency HIV Study participation. This secondary data analysis was approved by the institutional review board at the University ofNorth Carolina, Chapel Hill.

Sidebar

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DETAILS

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Conducting Health Research in Carceral Systems: Considerations and Recommendations

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ABSTRACT (ENGLISH)

Although the number of peo ple incarcerated in the United States has grown dramatically, research on how incarceration affects individuals and the communities they return to has lagged behind. This may be because of the unique challenges of doing research within carceral systems and the relatively small number of investigators who are competent to undertake these efforts.

We provide a primer for investigators with limited experience conducting research in carceral settings and highlight considerations and recommendations that may aid those conducting health research with incarcerated persons. We follow this with an illustrative case example exemplifying how the considerations apply to recent health research that our team conducted on mental illness prevalence in a large regional jail. Understanding how to effectively conduct research with criminal justice populations and systems is the first step in beginning to understand the effects of mass incarceration as a driver of health disparities and health inequity.

FULL TEXT

Headnote

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We provide a primer for investigators with limited experience conducting research in carceral settings and highlight considerations and recommendations that may aid those conducting health research with incarcerated persons. We follow this with an illustrative case example exemplifying how the considerations apply to recent health research that our team conducted on mental illness prevalence in a large regional jail.

Understanding how to effectively conduct research with criminaljustice populations and systems is the first step in beginning to understand the effects of mass incarceration as a driver of health disparities and health inequity. (Am J Public Health. 2020;110:S52-S55. doi: 10.2105/AJPH.2019.305449)

Despite the clear need for health-focused justice research, few investigators have formal training or applied experience conducting research in carceral settings.1 Not including or intentionally excluding incarcerated persons from studies may inadvertently exacerbate health disparities by making evidence-based interventions inapplicable or inaccessible to criminaljustice populations.2 For example, many national health surveys (e.g., the National Health Interview Survey, the Behavioral Risk Factor Surveillance Study), which form the basis for public health initiatives and reforms, have a long-standing history of excluding people who are incarcerated.3 The purpose of this commentary is to provide a lens through which investigators can thoroughly consider and then effectively navigate the challenges of conducting research within carceral settings-a critical competency for investigators who aim to reduce health inequities. We review factors to consider when facilitating partnerships with carceral staff, training a research team, and working with incarcerated populations.

CONSIDERATION 1: PARTNERING WITH FACILITY LEADERSHIP

Incarcerated persons are under the control of facility staff; they cannot independently express interest or arrive for research participation at will. Partnerships with staff will be needed to facilitate all stages of the research process-for example, methods for expressing interest and arranging meeting times, locations, and staffing. However, researchers must also recognize that their research aims may at times diverge from the facilitys goals (e.g., findings may not be good for the facilitys reputation or image). Particular research topics may not be perceived as important to the mission that these agencies are ultimately charged to prioritize (i.e., confinement as a means to promote public safety). In either case, researchers will need to find mutual ground on which to partner. We, therefore, recommend that researchers do the following:

1. Cultivate collaborative relationships with facility leadership by identifying mutual goals.
2. Highlight the advantages of completing the research from the carceral systems perspective. Advantages may include information on the prevalence ofhealth conditions that can be used in budgeting and knowledge of effective interventions for systemrelevant outcomes (e.g., reducing reincarceration, reducing facility incidents, reducing costs through improved preventive services). Even research findings that seem negative may provide information that the facility can use to reduce risk of liability.
3. Request a designated internal staff member who can facilitate communication between the research team and facility staff as needed for logistical support.
4. Provide updates on research progress and share research findings with facility leadership.

CONSIDERATION 2: HIERARCHICAL STRUCTURE

Rank titles (e.g., deputy, lieutenant, major) are typically used to communicate the This article was accepted October 13, 2019.

personnel structure in carceral settings. Knowledge of this structure and the structure of individuals outside of it (e.g., contracted health staff) within the facilities with which researchers wish to partneris critical to ensure that appropriate approvals are obtained. We, therefore, recommend that researchers do the following:

1. Request information about the facility's personnel structure during early leadership meetings and disseminate knowledge gained to the research team.
2. Identify whether any staff who are relevant to your project are contract workers. If so, consider having additional meetings with these staff or their own leadership.
3. Identify "front line" staff who will provide the research team with access to the facility and participants and establish rapport and trust.

CONSIDERATION 3: KNOWLEDGE OF THE CARCERAL SYSTEM

The US carceral system is complex. It includes facilities such as jails and prisons, but states also have discretion in creating other types of carceral centers (e.g., reentry and work release centers). The type of facility in which the research occurs will have a direct impact on the study sample. One example is that jails are typically mixed-sex and vary in terms of security classification, and people detained there are typically incarcerated for a shorter duration than in prisons. Prisons are more likely to house people for months or years, be single-sex, and operate under a single security classification.4 Other types of facilities, however, may have even more distinctive selection criteria (e.g., drug treatment facility).5 Without a full understanding of the characteristics of the carceral system and of the particular facilities with which the research team plans to work, researchers will be limited in their ability to appropriately match their research questions to facilities and to understand the implications of their work. We therefore recommend that researchers do the following:

1. Obtain introductory training on the structure of the national and local carceral system to understand the implications of partnering with particular facilities on their research.6 8
2. Design research questions and use inclusion-exclusion criteria that are matched to the composition and characteristics of the carceral setting (e.g., typical charges, length of incarceration, focus on special populations) in which you plan to conduct research.

CONSIDERATION 4: RESEARCH ETHICS TRAINING

Previous abuses of incarcerated research participants resulted in substantial restrictions being placed on the types of studies that are allowable in carceral settings. Incarcerated persons are also now considered a vulnerable population, and institutional review boards must apply a higher level ofscrutiny to studies involving them. Exemptions that are extended to most human participant research studies (e.g., exempt status) are unlikely to apply to studies involving incarcerated people, and allowable research is restricted to the categories defined in Department of Health and Human Services regulations, 45 CFR 46 subpart C. We therefore recommend that researchers do the following:
1. Read relevant regulations, such as 45 CFR 46 subpart C, and become familiar with related approval requirements.
2. Obtain advanced training in ethical conduct of research with vulnerable populations.

CONSIDERATION 5: WORKING WITHIN CARCERAL SETTINGS

Carceral facilities, such as prisons and jails, rely heavily on adherence to established policies and protocols and will have specific tools and codes to communicate critical incidents (e.g., intrafacility violence, medical emergencies). In the United States, these rules and regulations may derive from the American Correctional Association Standards, which provide operational guidelines intended to promote safety within the facilities.8 Researchers will need to be familiar with the expectations for their conduct if these codes are applicable during data collection efforts, and should anticipate that actual or perceived safety considerations will be prioritized over factors such as research rigor and privacy. Safety determinations may also result in leadership-imposed restrictions on who can participate in the research or interventions being offered. We therefore recommend that researchers do the following:
1. Track attempted research contacts and enrollment (e.g., times of day, units visited) and use these data to determine a maximally efficient schedule of research visits.
2. Track changes in policies and protocols so that new team members can be more easily familiarized with the facility in the event of turnover.
3. Develop study protocols with built-in flexibility (e.g., multiple methods of participant contact) to allow your team to be responsive to changes in facility policy.

CONSIDERATION 6: ETHICS AND RESPECT FOR PERSONS

The involuntary and restrictive nature of incarceration makes it imperative for investigators to be attuned to possible threats to conducting research ethically- particularly given the severe abuse of incarcerated persons in past research.9 Maximizing autonomy and minimizing the potential for coercion is critical; coercion is particularly important to consider when determining financial incentives and recruitment practices. Investigators should also take care that study materials are written at an appropriate reading level (typically between the fourth and sixth grade) and accurately describe what, ifany, information from the study may be shared with carceral staff.10 12 Research staff should be aware that most people who become incarcerated have a history of chronic and severe trauma exposure ; thus, trauma-informed practices should be prioritized during participant encounters. We therefore recommend that researchers do the following:
1. Describe and recruit for the study in a manner that is empowering, not stigmatizing, and that minimizes coercion. Coercion can be minimized by avoiding involving facility staffin research recruitment to the greatest extent possible and devoting extra attention to participants' ability to decline or discontinue research participation without consequence.
2. Use a two-point consent process, in which participants consent at the start of data collection and reconsent to use of their information following completion of all study measures, in studies that collect potentially sensitive information.
3. Provide an incentive amount that matches, but does not exceed, compensation for research involvement in the community.
4. Train any facility personnel involved in recruitment on the voluntary nature of research.
5. Prepare study assessments in multiple formats (e.g., written and verbal) to accommodate participants' preferences and literacy.
6. Provide normalizing statements prior to discussing sensitive content, such as trauma exposure, disease states,

and parenting.
7. Offer breaks to participants if they begin to exhibit signs of discomfort or distress.

CONSIDERATION 7: MAXIMIZING CONFIDENTIALITY

Although incarceration restricts individual rights to privacy, researchers still have an obligation to protect data gathered during the research process. Researchers should actively seek to protect participants' confidentiality by collecting data in maximally private areas. Some facilities will have a separate room designated for interviews and legal visits that may be used by research staff; however, it is crucial to assess its level of confidentiality (e.g., the ability of officers and other incarcerated persons to see or hear inside of the room, the possible presence of audio recording). These circumstances raise privacy concerns for the participants, which, in turn, could affect both the answers the participants provide and their willingness to participate in the study. We therefore recommend that researchers do the following:

1. Understand a study's ability to obtain a Certificate of Confidentiality from the Department of Health and Human Services to protect participant data from being obtained by court order and be able to communicate the protections provided to potential participants.
2. Request locations for data collection that maximize participants' confidentiality and the safety of both the researchers and participants.
3. Discuss your protocols for maximizing confidentiality with the participant, including any ways in which confidentiality risks may emerge because ofthe setting.
4. Inform participants of information that may be learned through research that would require breaking confidentiality. Examples include disclosure of intent to harm self or others and contact covered by the Prison Rape Elimination Act.
5. Seek and document both the process and outcomes of professional consultation with colleagues, research ethicists, and attorneys when considering breaking confidentiality for reasons not covered during consent (e.g., unexpectedly witnessing conditions that gravely violate human rights).
6. Consider disseminating early research findings that have the potential to improve facility conditions.

CONSIDERATION 8: INTERVENTION POTENTIAL

Decades of research has documented that people who are likely to become incarcerated in the United States are disproportionately burdened by challenges such as mental and physical disease or disorder and poverty.4,15-19 Incarceration only further compounds these difficulties-for example, by making it even harder to find housing and employment.17,20 Therefore, investigators who, in their research, include or focus on people who are incarcerated are highly likely to interact with participants who have a great need for connection to health and social resources. If prepared to offer such resources, research can serve as a potential intervention point, even ifthe explicit purpose of the research is not intervention (e.g., an observational cohort study).

Moreover, treatment research may provide access to resources that would otherwise be unavailable during incarceration (e.g., treatment trials that offer access to testing and treatments for conditions such as HIV and substance use disorders). Choosing to include or focus on incarcerated persons within research may, by extension, provide them with an opportunity to have more ownership over their own health. We therefore recommend that researchers do the following:

1. Provide a list oflocal resources (e.g., information on vocational education and training, accessible nondiscriminatory hospitals, and mental health institutions) to participants.
2. Be prepared to provide participants with education on health conditions being studied.
3. Ensure accurate portrayal of potential health benefits- particularly, when involvement is unlikely to have personal benefits but is intended to primarily gain knowledge.

CASE EXAMPLE- MENTAL HEALTH SCREENING STUDY

The following case example illustrates how these considerations were applied to a recent study of mental health and substance use within a large regional jail. The goal was to provide prevalence rates of various health conditions and to obtain the perspectives of incarcerated people on desired health-related programming. The study was in part

initiated because of growing local concern about rising incarceration rates and the incarceration ofpersons living with mental illness-something that was a priority among jail leadership as well (Consideration 1).
The research team engaged in a series of meetings to secure approval for study activities, obtain identification badges, and design inclusion-exclusion criteria that were acceptable to the facility (Considerations 2 and 3). Research staff visited individual units to recruit volunteers. Guards at the facility brought potential participants to a private meeting room (Consideration 7), a strategy suggested by facility leadership (Consideration 1), because research team members were not allowed to freely move through individual units (Consideration 5). Thus, the voluntary nature of research participation was discussed immediately and repeatedly during the consent process (Consideration 6). No information about an individual's consent to participate in the research being conducted at the jail was shared with the facility staff, and participants' names were not collected to further protect privacy (Consideration 7). After incarcerated individuals were identified for study eligibility and consent to participate was obtained (Consideration 6), interviews were conducted in a private room, just outside each unit to protect participant privacy (Consideration 7), while remaining in view of the guards (Consideration 5). Research staff provided participants with the option to complete most research measures privately or have them all read (Consideration 7) and, at the conclusion of the study, dispensed a referral sheet containing links to community resources beneficial to reentry (Consideration 8).
We also adjusted research staff visits over time as we learned the facility schedule; for example, recruitment was considerably lower when interviews conflicted with lunch, laundry, or medication dispersal. There were, however, occasional unavoidable conflicts that made data collection impossible on a given day, such as lockdowns (Consideration 5). In these cases, we actively communicated with the officers in each unit to learn more about how to best function in the facility (Consideration 5). Data collection recently was concluded, and our team is currently preparing a final report for the facility on findings that will be shared during a leadership meeting (Consideration 1).

CONCLUSIONS

Researchers require specialized training to conduct rigorous research in carceral systems. The considerations and recommendations outlined in this article are intended to provide guidance on how researchers can improve their preparation to undertake such efforts, both in health care fields and in other areas of science. Investigators who wish to learn more about conducting research in the carceral system and networking with others in this field may benefit from the following:
1. Joining relevant organizations (e.g., the Academic Consortium on Criminal Justice Health, the Justice &Incarcerated Health Committee within the American Public Health Association);
2. Seeking specialized training (see the National Institute on Drug Abuse [NIDA]-funded R25 Criminal Justice Research Training Program on Substance Use and HIV at Brown University [principal investigator: C. G. Beckwith] and the NIDA-funded T32 Training Program in HIV, Substance Use, and Criminal Justice at Columbia University [principal investigators: N. El-Bassel and L. Metsch]); or
3. Attending relevant conferences (e.g., the Academic Health and Policy Conference on Correctional Health). /4JPI-I

CONTRIBUTORS

All authors were involved in the conceptualization of this article, preparation of the article, and the case study discussed in the article. All authors reviewed and approved the final version and all revisions.

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CONFLICTS OF INTEREST

There are no conflicts of interest to be disclosed.

HUMAN PARTICIPANT PROTECTION

Although no human participant data are disclosed, all considerations mentioned come from institutional review board- approved studies.

Sidebar

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Documenting and Addressing the Health Impacts of Carceral Systems

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ABSTRACT (ENGLISH)

No other industrialized democracy has a carceral system that is as expansive, punitive, and racialized as that of the United States. More than 2.2 million people in 2018 were incarcerated in jails and prisons, a six-fold increase since the 1970s. Each year more than 600 000 people are released from prisons and more than 11 million cycle through jails, extending the effects of incarceration into households and shaping community health.

Mass incarceration is the result of social, political, and economic forces with deep roots in the aftermaths of slavery, labor exploitation, and racial discrimination. This is evident in the stark racial inequalities that exist in the carceral system. Black people are more likely to be arrested, killed by police, incarcerated, and placed in solitary confinement than their White counterparts. The criminalization of blackness and poverty, as reflected in the failed war on drugs, draconian sentencing laws, centralized power ofprosecutors, a school-to-prison pipeline, and gutting of health and social systems, is among the forces underlying the titanic expansion and deep entrenchment of the carceral state. Over the past 40 years, our society has deliberately divested from social and public goods designed to promote health and economic security while pumping resources into police, courts, and correctional systems that punish, impoverish, and dehumanize people and communities.

FULL TEXT

No other industrialized democracy has a carceral system that is as expansive, punitive, and racialized as that of the United States. More than 2.2 million people in 2018 were incarcerated in jails and prisons, a sixfold increase since the 1970s. Each year more than 600 000 people are released from prisons and more than 11 million cycle through jails, extending the effects of incarceration into households and shaping community health.

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We conceptualized this special supplement to amplify the growing chorus of scholars, practitioners, and activists who are committed to ending mass incarceration. As an interdisciplinary field, public health has a critical role to play by bringing our range of theoretical and analytic tools to bear on documenting and addressing the health impacts of carceral systems. As conveyed in prior research and the articles in this supplement, mass incarceration has already caused incalculable damage to the health and vitality of our society. As scholars working on these issues in local government, academia, advocacy, and the nonprofit world, we saw a need to further solidify recognition of mass incarceration as a sociostructural driver of health inequities in our field by devoting an entire supplement to this topic in a premier journal.

This supplement includes original research and essays that portray the myriad pathways through which carceral systems imperil the health of individuals, families, neighborhoods, and the population by compromising social determinants of health. Collectively, it also offers visionary ideas and practical guidance for addressing these harms. We hope it inspires public health scholars, advocates, and practitioners to continue devoting their intellect and energy to the topics covered.

We are thankful to everyone who submitted and contributed to this issue. We are especially fortunate to have powerful pieces written by formerly incarcerated people who are working tirelessly to help those still locked down to find hope and dismantle carceral systems for future generations. In addition, we thank the editors and staff at AJPH and the Robert Wood Johnson Foundation for supporting this supplement and ensuring that the articles are available in an open-access format. The aim was to ensure that the content finds its way beyond academic discourse and proves useful to all people fighting for health equity, decarceration, and racial justice. >4jPU

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An Overlooked Crisis: Extreme Temperature Exposures in Incarceration Settings

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ABSTRACT (ENGLISH)

Exposure to extreme heat and cold increases mortality. Events such as the 1995 Chicago, Illinois, heat wave caused nearly 700 extra deaths over a 50-day period1 and the Centers for Disease Control and Prevention2 determined that excessive cold in the United States causes a minimum of 1200 deaths yearly. Susceptibility to the health effects of extreme temperature is greater in subpopulations such as older adults, people with neurologic or mental disorders

and certain health comorbidities, and people who are socially isolated, bedbound, or lack mobility.
There is a knowledge gap on the impact of extreme temperatures on incarcerated people and their health. Incarcerated people are classified as a vulnerable population because of the social and economic disenfranchisement caused by mass incarceration, which may increase their susceptibility to adverse health outcomes. They have limited mobility and suffer from a disproportionate amount of mental health and medical comorbidities that are exacerbated by exposure to extreme temperatures.4 Furthermore, because extreme temperatures are a hallmark of climate change, we expect this vulnerable populations exposure to only increase. However, there is very little evidence on the health effects of extreme temperature exposure in incarcerated populations held in the United States. We summarize the literature and call for more research in this area.

FULL TEXT

Exposure to extreme heat and cold increases mortality. Events such as the 1995 Chicago, Illinois, heat wave caused nearly 700 extra deaths over a 50-day period1 and the Centers for Disease Control and Prevention2 determined that excessive cold in the United States causes a minimum of 1200 deaths yearly. Susceptibility to the health effects of extreme temperature is greater in subpopulations such as older adults, people with neurologic or mental disorders and certain health comorbidities, and people who are socially isolated, bedbound, or lack mobility.1,3
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EXISTING RESEARCH

Although we found no original research articles on the impact of extreme temperature exposure on the health of incarcerated persons, Motanya and Valera5 published a descriptive review on climate change and incarceration. They discussed the fatalities from heat in the Texas prison system attributable to lack ofindoor temperature regulation (numbering at least 14). They also detailed how exposure to extreme heat increased in prison populations in New Orleans, Louisiana, after Hurricane Katrina. They concluded that incarcerated populations are affected by climate change yet are not being considered in policy planning.

Because the research literature is so scant, we also searched stakeholder organizations Web sites and identified 13 related articles (see the Appendix, available as a supplement to the online version of this article at http://www.ajph.org). Two reports specifically focused on heat exposure in Texas Department of Criminal Justice-run facilities owing to the absence of air conditioning. The authors documented a heat index temperature of 150°F in July 2011 inside one of these facilities. Other stakeholder articles showed case examples of mortality from extreme cold exposure inside facilities, inadequate emergency management planning following natural disasters that increased exposure to heat, ongoing extreme temperature related lawsuits, and suggested temperature guidelines.

Finally, we searched the Westlaw law database for legal cases related to Eighth Amendment right violations from temperature conditions from 1980 to 2019. This search returned more than 1200 cases. We evaluated a random sample of 100 of these cases to determine themes (see the Appendix). The cases covered 29 states, with the majority of cases occurring after the year 2000 (75%). There were 61 cases related to cold exposure, 32 related to heat exposure, and 7 related to both. Sixteen of the cases documented plaintiffs held in solitary confinement or punitive isolation.

In the heat-related cases, plaintiffs gave examples of temperatures exceeding 100°F, broken or lack of air conditioning, sealed windows, faulty ventilation systems, and limited cooling resources such as water and access to fans. In four cases, plaintiffs were exposed to extreme heat while being transported in vehicles without air

conditioning or open windows. Four heat-related deaths were documented in Arkansas, Virginia, Tennessee, and Texas.

In the cold-related cases, plaintiff briefs mentioned cells with broken heating systems, temperatures below freezing, ice forming on the walls and in toilet bowls, and frost on metal. More than 30% ofthe cold-related cases specified inadequate clothing or blankets. Resulting health problems included constant flu-like symptoms, joint swelling and pain, and frostbite.

VULNERABLE POPULATIONS ON THE INSIDE

Although we identified limited research on the impact of ABOUT THE AUTHORS

extreme temperature exposure on the health of incarcerated persons, there are reasons to believe this population may be particularly at risk beyond the legal briefs. A disproportionate number of the subpopulations with increased vulnerability to the effects of extreme temperature exposure pass through the US criminal justice system. Compared with a standardized age-adjusted noninstitutionalized US population, people in prison facilities were 3.4 times more likely to report having heart-related problems and 1.5 times more likely to report having diabetes or asthma.4 In the 2011-12 National Inmate Survey, 66% ofpeople held in state and federal prisons reported taking prescription medication4 that could affect body temperature regulation and sensitivity to heat and cold.

Older adults are particularly vulnerable to the effects of extreme temperatures3 and are also a growing percentage of the incarcerated population (https:// bit.ly/33U7GsW). Furthermore, because incarceration may accelerate aging owing to excessive stresses on daily life, the National Institute of Corrections uses a cutoff age of 50 years to determine older adults. In 2014, people aged 55 years and older made up just 10% ofthe US state and federal prison population (https://bit.ly/2Ne9UwN) but accounted for more than 55% of the deaths that occurred that 6 year.

ELEVATED TEMPERATURE EXPOSURE

Incarceration facilities also may affect temperature exposures. As of 2015, 22 states lacked policies on temperature regulation in prison facilities.7 Of the 28 states with policies, only 17 states specified allowable temperature ranges and even fewer specified how these ranges would be enforced.7 Policies in jails and privately run facilities may be even more variable.7 Furthermore, federal facilities are also increasingly overpopulated. Halfofhigh- and medium-security male facilities are operating above rated capacity (https://bit.ly/ 2p2cgH0). Crowded conditions may make spaces hotter, as each individual generates body heat.

Overcrowding stresses facility infrastructure, which may also prevent proper temperature regulation. Additionally, aging correctional facilities may not have adequate ventilation. Poor ventilation leads to the spread of communicable illnesses, and it could also exacerbate extreme temperature exposure. Temperature exposure may be different for people held in solitary confinement because of the size and conditions of the cell. Incarcerated people may also not have access to water or blankets when needed or desired. Finally, exposure to extreme temperatures may occur indirectly from inadequate emergency management after power outages from natural disasters such as storms and wildfires. Overall, there may be increased exposure to extreme temperatures while in incarceration settings that would affect the health risks of this vulnerable population.

INVESTIGATION OF THIS CRISIS

Existing legal cases indicate that incarcerated populations may have high exposure and susceptibility to extreme temperatures. However, because of the lack of epidemiological evidence, we may not understand the full magnitude of the health effects caused by this exposure. Each year, roughly 5000 people die while being held in the US incarceration system with state, local jail, and federal facilities accounting for approximately 70%, 20%, and 10% ofthe deaths, respectively.6

Almost 90% of the deaths in state facilities are illness related, with the two leading reported causes being cancer (30%) and heart disease (26%),6 both of which are affected by extreme temperature exposure.3 We need dedicated federal grants to fund original epidemiological research on the health impacts of extreme temperatures in incarceration settings and to define which populations are most vulnerable. The intersection of incarceration and extreme temperature exposure is thus far being overlooked- yet, amid the extremity ofclimate change, this vulnerable population may be the most affected. /4JPI-I

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Connecting the Dots Between Mass Incarceration, Health Inequity, and Climate Change

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ABSTRACT (ENGLISH)

Stable housing is a prerequisite for maintaining employment and enjoying decent physical and mental health.7 Yet people ensnared by the criminal justice system are systematically excluded from both private and public housing.7 Furthermore, they are at higher risk for numerous health problems that often require supportive housing, which can cost-effectively reduce reincarceration rates. [...]for decades, hyperpoliced communities have demanded the reallocation of resources away from the police and toward public health and social infrastructures. According to the latest climate-science modeling, feminist social-help policies drive the deepest carbon emissions reductions and greatest resiliency from extreme weather.1 POLITICAL COURAGE AND MOBILIZATION The crises we face share the same fundamental causes, rooted in a system that rewards exploitation and privileges profit over well-being. An IPCC Special Report on the Impacts of Global Warming of 1.5°C Above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty.

FULL TEXT

Mass incarceration is a social problem with severe public health consequences. This is slightly different from calling it a public health problem. It might sound like splitting hairs, but the distinction has ramifications for how public health positions itself in this moment of political, economic, and environmental crisis. Perhaps unexpectedly, climate scientists are leading the call to address social inequality and the climate emergency simultaneously or face catastrophically worsening inequities.1 We have only a decade to roughly halve carbon emissions or risk calamitous levels of warming that would cause hundreds ofmillions to suffer and die prematurely.1 Indeed, the climate movement has mainstreamed the idea that we cannot avoid environmental catastrophe without fundamentally transforming our economy and society. Prison abolitionists and public health advocates have long made analogous arguments when they describe the fundamental causes of mass incarceration and health disparities as systems of extraction, exploitation, domination, racism, and heteropatriarchy. But mass incarceration, health inequity, and the climate emergency are all intertwined, in more than an analogy and in ways that no single field can address on its own.

THE SOCIAL RELATIONS OF RACIAL CAPITALISM

Most incarcerated people come from a handful of neighborhoods, primarily communities of color, in US major cities, yet most new prisons are built in rural hinterlands.2 Both sets of spaces have experienced chronic disinvestment over decades of deindustrialization, deregulation, and economic austerity. The result is "organized abandonment"2: poor urban communities of color, with few jobs and crumbling transit and housing; and poor rural landscapes, ecologically and economically devastated, first exploited and then abandoned by industry. Police flood the former with arrest quotas and quality-of-life ordinances while prison boosters descend on the latter promising jobs via new correctional facilities on former farmland or industrial properties.2 At each end of the prison-industrial complex, fragile communities and delicate ecologies bear the brunt ofexpanded carceral infrastructure rather than investment,

regeneration, and cultivation.

The extractions involved in forcibly removing residents from their neighborhoods to be warehoused in massive, faraway, high-security institutions cause enormous injury to humans and habitats alike. These processes undermine the health and wellbeing of people of color, indigenous people, and migrants-the same groups that are then targeted by the criminal justice system as the state's favored mode of crisis abatement. These same groups will bear the greatest burdens of climate change. In cities, in the neighborhoods with the highest incarceration rates, residential segregation makes it significantly more likely for people of color to live in highrisk heat-island conditions than for White people, who are more likely to benefit from cooling greenery.3 During a summer 2019 heat wave, a New York utility intentionally cut power in a majority-Black neighborhood to avoid larger blackouts (https:// nyti.ms/2Z8LIR2).

At the same time, ecogentrification is displacing lowerincome residents of color with wealthier, typically White gentrifiers.4 But this green urban affluence is misleading. Even accounting for reductions in transportation or building energy emissions, affluent residents have much larger consumption-driven carbon footprints.4 The result is eco-apartheid (https://bit.ly/ 2K1fvGc): the rich benefit from luxurious adaptation and mitigation while everyone else faces deteriorating environmental and social conditions. Displaced poor and working-class residents end up on the street, incarcerated, or pushed further to the urban periphery. And if they do end up incarcerated, climate change directly threatens their health and safety. During Hurricane Katrina, those in the Orleans Parish Prison were abandoned without power, water, food, or proper ventilation and chest-deep in water.5 During Hurricane Sandy, New York City had no evacuation plan for Rikers Island jail, even though it was in an evacuation zone (https://bit.ly/2pnuW3O).

For rural communities, the economic benefits of prisons are dubious. Warehousing urban incarcerated people in rural communities acts only temporarily as a "hidden subsidy"6: inflated population counts in otherwise shrinking areas increase the amount ofstate aid that host counties receive relative to their tax effort. But this shortterm economic payoff also creates a dependence on correctional jobs and ultimately deters "alternative forms of development, instead fostering cycles of base subsistence and dependence on continued incarceration 6 rates.

Meanwhile, carceral infrastructure causes direct environmental damage. In Alabama in 2014, the Black Warrior Riverkeepers successfully settled a lawsuit after finding that the Donaldson Correctional Facility dumped 800000 gallons of sewage into nearby creeks. In Letcher County, Kentucky, local antiprison activists and environmental groups blocked a new federal prison on the grounds that it would contaminate local watersheds, pollute the air, and threaten endangered wildlife habitats, including a rare oldgrowth forest.

TACKLING FUNDAMENTAL CAUSES

Yet, despite the grave urgency we face, this is also a moment of unprecedented opportunity. Virtually all ofthe most ambitious proposals to tackle the climate emergency implicate fundamental social determinants of health. These include massive public investments to decarbonize the economy by 2030; the creation of millions of new jobs to achieve decarbonization and a just transition; targeted investments in environmental justice communities for decarbonization and adaptation; and fully funded social services such as universal health care and housing. These exact same measures also could be the route to decarceration and the elimination of health disparities in the United States.

In the 1990s, when mass incarceration was accelerating, one third of men sent to prison were unemployed. Today, the unemployment rate among formerly incarcerated people is 27% (http://bit.ly/37ltSig). Full employment, based on the expansion of renewable energies, ecosystem restoration, expansion of social services, and major new public works, can make a huge difference in the lives ofpeople in or at risk for contact with the criminal justice system.

Stable housing is a prerequisite for maintaining employment and enjoying decent physical and mental health.7 Yet people ensnared by the criminal justice system are systematically excluded from both private and public housing.7 Furthermore, they are at higher risk for numerous health problems that often require supportive housing, which can cost-effectively reduce reincarceration rates.

Unprecedented investments in social and supportive housing will dramatically improve health and criminal justice outcomes if they include people affected by mass incarceration and provide support for their specific needs. High-density, mixed-use, lowcarbon, beautiful public housing enables poor and working-class residents to live close to

where they work and engage in lowcarbon collective consumption (e.g., public recreation, art, music, theater) rather than highcarbon private consumption (e.g., shopping, travel). This is central to actually, and democratically, decarbonizing cities and rebuilding communities devastated by mass incarceration.

Finally, for decades, hyperpoliced communities have demanded the reallocation of resources away from the police and toward public health and social infrastructures. Intersectional, feminist antiviolence activists have developed their own comprehensive models of restorative justice in their communities. Feminist organizers make up the front lines of the prison abolition movement, in which Black women in particular lead the struggle for a new society as the struggle for a decarcerated future. Similarly, around the world, women are already leading the fight against climate change, especially in the highest-risk places. According to the latest climate-science modeling, feminist social-help policies drive the deepest carbon emissions reductions and greatest resiliency from extreme weather.1

POLITICAL COURAGE AND MOBILIZATION

The crises we face share the same fundamental causes, rooted in a system that rewards exploitation and privileges profit over well-being. The proposals in this editorial are only a starting point for an extraordinary, intersectional social and political mobilization. The time for political equivocation and calls for more research has passed. We do not have time to continue adhering to the neoliberal doctrine that there are incremental technical solutions to these structural, and interconnected, problems. We should bring our political capital, skills, and expertise to the broader movement, to ensure the public's health during the transition. .4JPI-I

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Training the Next Generation of Researchers Dedicated to Improving Health Outcomes for Justice-Involved Populations

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ABSTRACT (ENGLISH)

The epidemic of mass incarceration is both a cause of and a contributor to racial disparities in the United States.1 State departments of correction collectively spent $8.1 billion on health care services in 2015, an estimated one fifth of overall prison expenditures.2 For many people-particularly people of color without health insurance and inequitable access to health services in the community-incarceration may be a period during which they are more likely to receive health services. However, corrections-based health care is not subject to the same regulations, oversight, and accountability as communitybased health care. Information on health care needs and quality also is not readily reported by these systems. Expanding access to high-quality health care for incarcerated people represents a public health opportunity to screen, prevent, diagnose, and treat illnesses. The provision of HIV testing, counseling, prevention, treatment, and care, as well as the delivery of effective treatments for substance use disorders, HCV, and mental health disorders, is especially important given the high rates of these illnesses among justice-involved populations. Despite the aforementioned opportunities, health-related research focused on justice involved populations remains limited to a relatively small number of investigators. According to a study that examined National Institutes of Health (NIH)-funded research projects from 2008 to 2012, fewer than 0.1% of NIH grants focused on justice health research.3 The authors had several recommendations to increase NIH support of justice health research, including establishing justice-focused training and career development programs for researchers. We performed a 10-year retrospective review of the NIH Research Portfolio Online Reporting Tools Expenditures and Results Tool (RePORTER) in September 2019 and identified only two NIH-funded training programs that have a specific focus on justice-involved populations. These T32- and R25-grantsupported programs are funded by the National Institute on Drug Abuse. Thus, an urgent need exists to expand training in this field of research and to increase the number and capacity of investigators working with justice-involved populations.

Directed efforts to expand training opportunities are needed, particularly for underrepresented minority investigators, to increase the number of early career scientists appropriately trained to conduct clinical, behavioral and social science research with these disadvantaged populations. Herein, we summarize important goals and objectives for justice-focused health researchers and provide examples of applied and practical training experiences.

FULL TEXT

The epidemic of mass incarceration is both a cause of and a contributor to racial disparities in the United States.1 State departments of correction collectively spent $8.1 billion on health care services in 2015, an estimated one fifth of overall prison expenditures.2 For many people-particularly people of color without health insurance and inequitable access to health services in the community-incarceration may be a period during which they are more likely to receive health services. However, corrections-based health care is not subject to the same regulations, oversight, and accountability as communitybased health care. Information on health care needs and quality also is not readily reported by these systems. Expanding access to high-quality health care for incarcerated people represents a public health opportunity to screen, prevent, diagnose, and treat illnesses. The provision of HIV testing, counseling, prevention, treatment, and care, as well as the delivery of effective treatments for substance use disorders, HCV, and mental health disorders, is especially important given the high rates of these illnesses among justice-involved populations.

Despite the aforementioned opportunities, health-related research focused on justiceinvolved populations remains limited to a relatively small number ofinvestigators. According to a study that examined National Institutes of Health (NIH)-funded research projects from 2008 to 2012, fewer than 0.1% of NIH grants focused on justice health research.3 The authors had several recommendations to increase NIH support of justice health research, including establishing justice-focused training and career development programs for researchers. We performed a 10-year retrospective review of the NIH Research Portfolio Online Reporting Tools Expenditures and Results Tool (RePORTER) in September 2019 and identified only two NIH-funded training programs that have a specific focus on justice-involved populations. These T32- and R25-grantsupported programs are funded by the National Institute on Drug Abuse. Thus, an urgent need exists to expand training in this field of research and to increase the number and capacity of investigators working with justice-involved populations. Directed efforts to expand training opportunities are needed, particularly for underrepresented minority investigators, to increase the number of early career scientists appropriately trained to conduct clinical, behavioral and social science research with these disadvantaged populations. Herein, we summarize important goals and objectives for justice-focused health researchers and provide examples of applied and practical training experiences.

GOALS AND OBJECTIVES FOR TRAINING PROGRAMS

The box on page S19 outlines eight specific areas of training that are fundamental components ofjustice-focused research training programs, including curricula on the structure and function of the justice system, the confluence and epidemiology of incarceration and disease, regulatory requirements and ethical considerations of conducting research among vulnerable populations, and research methodologies that are particularly relevant to justice settings.

PRACTICAL TRAINING METHODS

The two NIH-funded training programs (5R25DA037190, 5T32DA037801) that focus on justice-involved populations both provide mentored research opportunities through which trainees and junior investigators develop and apply their skills. Both programs also strive to create a team of mentors focused on not only research education but also professional development and career mentoring, essential components to support the advancement of a successful F31, F32, K01, K08, K22, K23, K99/R01, or a comparable career development award application following completion of the training program.

Career mentors impart specific knowledge and expertise related to professional skill development. Career mentors can also facilitate professional networking by introducing trainees to influential academic scientists. For example, the R25-funded Lifespan/Brown Criminal Justice Research Training (CJRT) Program on Substance Use and HIV at Brown University convenes a biannual in-person workshop for CJRT scholars, former scholars, faculty mentors, and

affiliated faculty, with one of the workshops held in conjunction with the Academic and Health Policy Conference on Correctional Health. One of the great successes of the CJRT program has been the close network of justice-focused investigators that has been created through the program. In addition to providing opportunities for training, biannual in-person workshops provide an opportunity to interact with scholars from around the United States, creating a nurturing professional network that extends beyond formal CJRT meetings.

Similarly, the T32-funded Training Program on HIV and Substance Use in the Criminal Justice System at Columbia University cosponsors a yearly networking event with all HIV- and substance use-related training programs across the university. This provides an excellent opportunity for networking among the directors, mentors, and trainees. Furthermore, both of these R25- and T32funded training programs encourage and support trainee's presentations at conferences that target co-occurring conditions, such as those hosted by the College on Problems of Drug Dependence and the International AIDS Society. Beyond attending specialty conferences for their own training and professional growth, researchers committed to improving health and well-being outcomes for justice-involved populations share their work with the wider scientific community.

Providing a mentored research experience is a key component of justice-focused health training programs and can be supported through pilot funding mechanisms internal to the training program or available through the host institution. This type ofresearch experience provides trainees with an opportunity to gain a hands-on experience, including study conceptualization and design; development of collaborations with justice and community partners; submission of a research protocol to the institutional review board and addressing any concerns from the institutional review board; implementation of the research protocol in the field or performance of a secondary data analysis; analysis of study results; dissemination of the results at national meetings and in the peer-reviewed literature; and review of feedback from justice and community partners and other relevant stakeholders. Importantly, the research study should be designed to produce preliminary data and findings that directly support and inform future applications for NIH research funding.

CONCLUSIONS

To address the profound health disparities that are created by mass incarceration in the United States, we must expand the number and capacity of investigators who are conducting research with justice-involved populations. This requires resources to fund multidisciplinary training programs for predoctoral students, postdoctoral researchers, and junior faculty members. Training programs need to incorporate a justice-focused curriculum and deliver applied research experiences to establish emerging and early career investigators on a trajectory toward research independence. ÂfPU

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Sidebar

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Stigma and US Nurses' Intentions to Provide the Standard of Maternal Care to Incarcerated Women, 2017

Goshin, Lorie S, RN PhD [1] ; Sissoko, D R Gina, BA [1] ; Stringer, Kristi L, PhD [1] ; Sufrin, Carolyn, MD PhD [2] ; Byrnes, Lorraine, APRN PhD [1] [1] Hunter-Bellevue School of Nursing, Hunter College, City University of New York, New York. [2] Carolyn Sufrin is with the Department of Gynecology and Obstetrics and theDepartmentofHealth, Behaviorand Society,JohnsHopkins University SchoolofMedicine, Baltimore, MD.

ABSTRACT (ENGLISH)

Objectives. To examine relationships among actionable drivers and facilitators of stigma and nurses' intentions to provide the standard of maternal care recommended by the Association of Women's Health, Obstetric, and Neonatal Nurses (AWHONN) for incarcerated women. Methods. We conducted a Web-based survey of perinatal nurses in the United States (n = 665; participation rate 98.0%;completion rate 95.3%) in July through September 2017. We used multivariable logistic regression to predict higher than median intentions to provide the standard of care. Results. Lower stigmatizing individual attitudes and institutional norms and higher perceived autonomy when caring for an incarcerated woman were significantly associated with higher care intentions. Knowledge of the AWHONN position statement on the standard of care or their own state's shackling laws was not associated with higher care intentions. Conclusions. We documented significant associations among actionable drivers and facilitators of stigma and the intentions of a key health care provider group to deliver the standard of maternal care to incarcerated women. Individual- and institutional-level stigma-reduction interventions may increase the quality of maternal care and improve perinatal outcomes for women who give birth while incarcerated. (Am J Public Health. 2020;110:S93-S99. doi:10.2105/AJPH.2019.305408)

FULL TEXT

Headnote

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Although the overall incarceration rate in the United States has fallen since 2009, incarceration rates for women remain historically high.1 Institutionalized racism has led to the disproportionate incarceration of Black women,2 with the highest female imprisonment rates in Black women of reproductive age.3 Local jurisdictions also disproportionately criminalize women in poverty, with mental illnesses, or with substance use disorders,4 resulting in increasedjail incarceration rates for women.1 An estimated 4% to 5% of women are pregnant upon incarceration.5,6 Women who are incarcerated during pregnancy have higher risks for adverse pregnancy outcomes.7 Reducing the adverse impact of incarceration on maternal health outcomes requires the elucidation of the mechanisms through which incarceration creates or exacerbates maternal health disparities.

Incarceration limits pregnant womens autonomy and ability to care for themselves. Confinement thus makes incarcerated women dependent on custody staff and health care providers to ensure their survival and that of their fetuses. Most US departments of correction do not design correctional facilities to safely house pregnant women.8 The availability in correctional facilities ofpre- and postnatal care that meets community standards is highly variable.9,10 Incarcerated pregnant women are transported to community hospitals to give birth. Custody officers routinely apply nonmedical restraints, commonly called shackles, during transport and the time outside the custody

setting for the purported reasons of preventing escape and harm to self or others.11 Shackles create potentially life-threatening safety hazards for pregnant women and their fetuses by limiting movement during labor and postpartum recovery and increasing the time to assessment and intervention in emergencies.12 Being shackled may contribute to or exacerbate womens behavioral health conditions and posttraumatic symptoms.

Health care provider organizations and states have implemented population-level efforts to improve maternal care for incarcerated women. The major US obstetric12 and nursing13 organizations have statements outlining acceptable standards of maternal care specific to this population. The standards recommend care that is of the same quality and as safe as that ofnonincarcerated people as well as provider advocacy of the removal of shackles in the absence of imminent safety or escape risks. Laws covering approximately half of US states, the District of Columbia, and the Federal Bureau ofPrisons and policies in most other areas restrict the use of shackles during some part of pregnancy to women who present risks of harm or escape.14 The majority of shackling laws authorize their removal at the request of a health care provider. Evidence suggests that routine shackling continues,10 even in states with shackling laws.15

As nurses are key members of the health care team when people give birth in hospital settings, their intentions to adhere to professional standards are paramount for improving maternal care. Behavioral intentions are influenced by attitudes toward a behavior, perceptions of social pressure to perform the behavior, and perceived control over the ability to perform the behavior.16 The continuation of shackling may stem from stigmatizing attitudes held by health care providers toward incarcerated women and structural stigma-reflected social norms within the hospital environment. Stigma is a fundamental cause of health, education, and economic adversities in people with a history of incarceration.17 Research assessing nurses' attitudes toward incarcerated people, although scant, suggests a high degree of negativity.18,19 Judgmental institutional norms ofthe care ofthis population have also been identified.20 Nurses caring for incarcerated people in carceral and community settings also report a lack of full professional autonomy because of tension with custody

officers.20,21

Guided by the Health Stigma and Discrimination Framework,22 we examined the relationships among actionable drivers and facilitators of stigma and nurses' intentions to provide the Association of Women's Health, Obstetrics, and Neonatal Nurses's (AWHONN's)13 recommended standard of maternal care to incarcerated women. The figure in Appendix A (available as a supplement to the online version of this article at http:// www.ajph.org) illustrates our adaptation of the framework to depict stigma experienced by pregnant woman who are incarcerated.

Stigma drivers comprise individual providers' discriminatory attitudes toward the stigmatized group. Facilitators can be positive (e.g., protective laws, professional position statements) or negative (e.g., unit-level norms marking incarcerated women as stigmatized and deserving of discrimination) influences on stigma outcomes, such as shackling in the absence of risks. The term "actionable" indicates that these factors may be amenable to intervention. We tested the following hypothesis among nurses with experience caring for an incarcerated pregnant woman in a hospital setting: stronger intentions to provide the standard of maternal care to incarcerated women would be associated with knowledge ofthe AWHONN position statement against shackling, knowledge of whether their states had shackling laws, lower stigmatizing individual attitudes and institutional norms, and greater perceptions of autonomy over care when a patient is incarcerated.

METHODS

Between July and September 2017, we conducted an anonymous online survey of AWHONN members. AWHONN is the largest US professional organization for perinatal nurses. This study on stigma was part of a parent study investigating nurses' general experiences with and knowledge of the care of incarcerated pregnant and postpartum women.23 We recruited members who designated their work areas as antepartum, intrapartum, postpartum, or mother-baby hospital units (n = 11 274 eligible nurses). Nurses with and without experience caring for incarcerated women were eligible for the parent study. Only data from respondents with experience caring for an incarcerated woman are reported here. We recruited participants through an e-mail sent by AWHONN, with 2 emails sent in total. As an incentive, we offered a $1 charitable contribution per participant to the National Diaper Bank Network.

Measures

Our survey contained adapted and investigator-developed measures of demographic and background characteristics, actionable drivers and facilitators ofstigma, and intentions to provide the standard of maternal care to incarcerated pregnant women. Appendix B (available as a supplement to the online version of this article at http://www.ajph.org) includes the survey measures reported here. Before deployment, we tested the survey for content, readability, and redundancy with a pilot sample of 9 experienced perinatal providers (5 nurses, 4 obstetricians).

Demographic and background characteristics. We gathered information on demographic and background factors associated with general US adult attitudes toward currently or formerly incarcerated people. These included gender (1 = female), race/ethnicity (1 = non-Hispanic/Latinx White), personally known someone who has been incarcerated (1 = yes), friend or family member in law enforcement or corrections (1 = yes), and history of victimization (1 = yes). We also asked respondents' highest level of nursing education, years of nursing experience, and the state in which they practiced nursing.

Actionable drivers and facilitators of stigma. We measured 5 potentially actionable drivers and facilitators of stigma in the perinatal care environment. We first assessed knowledge of the 2011 AWHONN statement as the nursing standard of care and knowledge of their states' shackling laws. We gave 3 response options to each knowledge question: yes, no, and I don't know/I'm not sure.

To assess individual stigmatizing attitudes toward incarcerated pregnant women, we adapted an existing instrument assessing the attitudes of perinatal nurses toward women who use substances during pregnancy.24 Respondents were asked to rate on a 5-point Likert scale how much they agreed with 13 statements about incarcerated pregnant women. During the adaptation, we removed questions not applicable for already incarcerated people and added 2 questions on specific attitudes toward shackling, 1 question on whether participants felt fearful when providing nursing care to incarcerated pregnant women, and 2 questions comparing attitudes toward incarcerated and nonincarcerated pregnant women. We reverse scored questions with a positive valence. We summed each item to create the scale score (range = 13-65), with higher scores indicating higher levels of stigmatizing attitudes. The internal consistency reliability of this scale was an a of 0.83.

To assess institutional norms, we asked respondents to estimate using a 5-point Likert scale the opinions of other professionals in their hospital units whose opinions they value. We measured their perceptions of unit-level opinions on the necessity of shackling for safety, the dangerousness of shackling, and the importance ofadvocacy to remove shackles. Higher scores on this scale indicate more stigma, with the last 2 questions being reverse scored (range = 3-15). The internal consistency reliability of this scale was an a of 0.82.

To assess perceived autonomy when caring for incarcerated pregnant women, we asked respondents to rate on a 5-point Likert scale how much they agreed with 6 statements. The first 2 indexed their sense of control over shackle placement and removal. The last 4 assessed the perceived difficulty of advocating shackle removal if other professionals (corrections officers, hospital security, physicians, other nurses) want them to remain on. The total score on this scale was a sum of each item (range = 6-30), with the last 4 questions reverse scored. Higher scores on this scale indicate higher perceived autonomy. The internal consistency reliability of this scale was an a of 0.83.

Intentions to provide the standard of maternal care. We developed 3 questions to measure nurses' intentions to provide the AWHONN recommended standard of care.13 Respondents were asked to rate, using a 5-point Likert scale, the strength of their intentions to promote patient safety for incarcerated pregnant women, advocate the removal of shackles in the absence of risks, and provide the same quality of care to incarcerated women as they do for nonincarcerated women. We summed each item to create the scale score (range = 3-15), with higher scores reflecting stronger intentions to provide the standard of care. The internal consistency reliability of this scale was an a of 0.67.

Analysis

We coded answers to the knowledge questions as correct or incorrect. For questions measuring knowledge of the AWHONN statement, we coded no and I don't know/I'm not sure as incorrect. We coded shackling law responses using each respondent's practice state to determine whether they lived in the District ofColumbia or 1 of the 22

states that had enacted legislation at the time ofthis study. We coded as incorrect respondents who inaccurately reported that their state had or did not have a shackling law and those who answered "I don't know or I'm not sure." We then calculated univariate statistics. To address negative skew in our outcome, we dichotomized care intentions scores at the median of 13 to identify nurses with higher (greater than median) and lower (less than or equal to median) intentions. We used bivariate analyses (%2 or t test) to examine associations between the binary intentions score and each of the demographic and background characteristics and actionable drivers and facilitators of stigma. We then created multivariable logistic regression models of the endpoint intentions using all variables with a significant bivariate association.

RESULTS

In total, 988 nurses clicked on the survey link, 968 continued to the second page, and 923 completed the survey, for a participation rate of 98.0% (respondents who signaled agreement to participate by continuing to the second page divided by those who clicked on the survey link) and a completion rate of 95.3% (respondents who completed the survey divided by those who continued to the second page).25 Seventyfour percent (n = 690) reported experiences caring for incarcerated pregnant women in hospital perinatal units, and 665 of the experienced group completed all included scales. Respondents with experience caring for incarcerated women during pregnancy reported more years of nursing experience than did those with no experience caring for them. One fifth (n = 144) of respondents with experience reported caring for more than 20 incarcerated women during pregnancy over the course of their careers.

Table 1 includes descriptive statistics for the demographic and background characteristics, actionable drivers and facilitators of stigma, and intentions scores. Our sample was overwhelmingly female (99.8%), non-Hispanic/Latinx White (83.9%), educated at the bachelor's level or higher (85.0%), and experienced in nursing (86.0% with 10 or more years of experience). More than half of respondents (61.1%) personally knew someone who had been incarcerated, and a similar proportion had a friend or family member who worked in law enforcement (59.8%). Almost half (45.3%) reported a history of crime victimization.

Although all of the respondents were active members, less than 1 in 5 knew about AWHONN's standards on perinatal care for incarcerated women. More than half (58%) practiced in a state with a shackling law. Less than 10% correctly knew whether their states had or did not have shackling laws. The majority of respondents did not know or were not sure whether AWHONN had a position statement (79.7%) or their states had shackling laws (88.5%).

Table 2 includes bivariate associations between respondents with lower and higher intentions to provide the standard ofmaternal care, each of the demographic and background characteristics, and actionable drivers and facilitators of stigma. The demographic and background characteristics did not have significant bivariate associations with care intentions. With the exception ofknowledge of state shackling laws, all of the actionable drivers and facilitators of stigma (knowledge of the AWHONN position statement [X =11.9; P = .001], individual stigmatizing attitudes [t = 16.0; P< .001], stigmatizing institutional norms [t = 10.7; P< .001], and perceived autonomy [t = 7.3; P< .001]) were significantly associated with higher care intentions.

Table 3 includes results of the multivariable models. We first created a model with knowledge of the AWHONN position statement, individual stigmatizing attitudes, stigmatizing institutional norms, and perceived autonomy. In the multivariable model, knowledge of the AWHONN position statement was no longer significantly associated with care intentions, and removing the knowledge variable had no effect on the estimates. Stigmatizing institutional norms and individual-level attitudes and perceived autonomy remained significantly associated with higher intention scores, with individual stigmatizing attitudes having the strongest association. For every 5-point decrease in the individual stigmatizing attitudes score, respondents were almost 3 times as likely to have higher care intentions (odds ratio [OR] = 2.8; 95% confidence interval [CI] = 2.3, 3.4). For stigmatizing institutional norms, every 5-point decrease was associated with a doubling of the likelihood of having higher intentions (OR = 2.2; 95% CI = 1.4, 3.5). Every 5-point increase in the perceived autonomy score was associated with 1.4 times increased likelihood of higher care intentions scores (OR = 1.4; 95% CI = 1.1, 1.7).

DISCUSSION

Our study builds on previous research identifying individual and facility-level stigmatizing attitudes and a perceived lack of autonomy when caring for incarcerated people19-21 and connects them to nurses' intentions to provide the standard of care to incarcerated pregnant women in particular. Our results demonstrate the potential deleterious effects of stigma on the maternal care provided to incarcerated pregnant women in community hospitals. Although the distribution of our intentions data suggests that nurses had strong overall intentions to provide the standard of maternal care recommended by their professional organization, stigmatizing attitudes and institutional norms remained significant; these are negative predictors of having the expected high level of commitment.

Professional position statements and legislation are necessary but may not be sufficient to ensure that incarcerated women receive the standard of maternal care. In our study, knowledge of existing population-level efforts to improve the care of incarcerated pregnant women was low. Knowledge was also not associated with nurses' intentions to promote the safety ofincarcerated patients, to provide them with the same quality ofcare as other pregnant patients, or to advocate shackle removal in the absence of safety or flight risks. Not addressing institutional norms, individual attitudes, and nurses' perceived ability to control the care of their incarcerated patients could put women at further risk for potentially life-threatening safety hazards if providers fail to advocate shackle removal or for the same quality of care provided to nonincarcerated women.

Stigma-reduction interventions must be multilevel, addressing individual drivers and institutional-level facilitators. At the individual health care provider level, effective approaches for reducing mental illness and substance userelated stigma may be adapted for this purpose.26 These include teaching providers about mass incarceration and incarceration-related stigma, as well as creating opportunities for them to build skills related to caring for incarcerated women and communicating effectively with custody officers.

Joint training between health care providers and custody staff could facilitate shared racial/ethnic disparities in maternal morbidity and mortality through adoption ofa peripartum safety bundle.28 The development of a safety bundle for the care of incarcerated pregnant women could enhance hospital recognition of disparities in the care delivered to this group and support systems to accurately document when patients are incarcerated so that adverse outcomes can be identified and quickly addressed. The use of a checklist on admission of any incarcerated woman would prompt nursing assessment of these risks. As bias is most active in stressful, fast-moving situations, which are common in hospital settings, the checklist could also be beneficial in slowing health care providers down long enough to focus on the woman's behavior, not her status as an incarcerated person.

Limitations

Our sample of nurses was homogenous in terms ofgender, race, and years ofexperience. We also recruited from a professional organization. Thus, they may not represent the larger population of US perinatal nurses with experience caring for incarcerated pregnant women in hospital settings. Gender and racial homogeneity accurately reflect demographics of the recruiting organization and the US nursing workforce.29 Despite a lack of demographic diversity, the sample had adequate variability on the background factors known to be associated with general US adult attitudes toward justice-involved people. We were unable to compare these factors between our sample and the larger nursing workforce, as these data are not available, to our knowledge.

Although care intentions account for a substantial proportion of the variance in actual health care provider behavior,30 our survey was vulnerable to response bias, and we did not measure the actual care nurses provided to incarcerated women. We also did not measure women's birth experiences or health outcomes. We focused on health care providers because stigma in health care settings is particularly dangerous, although it is amenable to intervention.26 We used an anonymous online survey to reduce the effect of social desirability on the study findings. Reliability for the intentions scale was also questionable, likely because of the low number of items. In response to our pilot survey reviewers' concerns about respondent burden, we chose to limit the number of items. Future research in this area should refine the measurement of provider intentions, assess the care provided against the standards, and report birth experiences and health outcomes of incarcerated women and their newborns.

Lastly, we measured only incarcerationrelated stigma, not the intersectional stigma experienced by incarcerated

women. Racism, poverty, mental illness, and substance use likely factor into stigma affecting this population. We are unable to disaggregate the individual effects of each on nurses' intentions to provide the standard of maternal care. To be most effective, interventions to improve the care of incarcerated pregnant women likely need to address stigma from an intersectional perspective. In particular, racism likely plays a large role in nurses' intentions to provide the standard of maternal care to incarcerated women given that it defines the US criminal justice system and is embedded in US health care systems. Nonincarcerated women of color are more likely to report health care provider mistreatment during pregnancy and childbirth than are White women, even when controlling for other stigmatizing social risks.31 Although our study was not designed to assess the impact of racism on the maternal care of incarcerated pregnant women, we acknowledge that this is an important future area of study.

Public Health Implications

Our findings suggest that stigma manifested as lower intentions to provide the standard of maternal care may be a mechanism through which incarceration contributes to maternal health inequities. Incarcerated women's pregnancy status and impending motherhood conjure deep judgment against them.32 To improve the health of this population, our results argue for incarceration stigma-reduction interventions, in addition to advocacy of passing or strengthening shackling legislation. Our results provide the groundwork for the development of theoryand evidence-based stigma-reduction education for health care providers.

More broadly, our findings argue for nonpunitive responses to the poverty, mental illness, and substance use that bring women into contact with the justice system. By reducing our reliance on criminal legal responses, we can prevent the effects of incarceration-related stigma on maternal care, prevent incarceration-related maternal-child separation, and address the root causes of women's incarceration.33 Research is needed to build the evidence base for community alternatives and determine the most effective mechanisms for scaling them up to meet the needs of pregnant women who are at risk or currently justice involved. ÂfPU

CONTRIBUTORS

L. S. Goshin designed the study, analyzed the data, and wrote the first draft of the article. D. R. G. Sissoko and K. L. Stringer assisted with interpreting the data and drafting the article. C. Sufrin and L. Byrnes assisted with designing the study, interpreting the data, and revising the article. All authors approved the final version.

Sidebar

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CONFLICTS OF INTEREST

We have no conflicts of interest to disclose.

HUMAN PARTICIPANT PROTECTION

The City University ofNewYork integrated institutional review board determined that this study was exempt from review.

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DETAILS

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A Multilevel Approach to Understanding Mass Incarceration and Health: Key Directions for Research and Practice

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ABSTRACT (ENGLISH)

After decades of punitive social policies driving up incarceration rates, the number of lives affected by the US criminal legal system is unprecedented. In 2016, 6.7 million people were in jail, in prison, or on probation or parole, more than double the number in 1986.1 Mounting evidence suggests that this has dire consequences for population health beyond its immediate impact on incarcerated people. Nearly all incarcerated people are taken from family members and communities, but data collection efforts and theoretical frameworks that appreciate the widespread impact this may have are alarmingly lacking. Public health researchers, practitioners, and activists have a responsibility to examine and communicate the widespread health consequences of mass incarceration for all

people and communities, as well as how these effects are inequitably distributed.

FULL TEXT

After decades of punitive social policies driving up incarceration rates, the number oflives affected by the US criminal legal system is unprecedented. In 2016, 6.7 million people were in jail, in prison, or on probation or parole, more than double the number in 1986.1 Mounting evidence suggests that this has dire consequences for population health beyond its immediate impact on incarcerated people. Nearly all incarcerated people are taken from family members and communities, but data collection efforts and theoretical frameworks that appreciate the widespread impact this may have are alarmingly lacking. Public health researchers, practitioners, and activists have a responsibility to examine and communicate the widespread health consequences of mass incarceration for all people and communities, as well as how these effects are inequitably distributed.

MULTILEVEL FRAMEWORKS

Sociological and criminological research point to incarcerations negative consequences for families and communities, including those related to family functioning, parenting capacity, employment markets, and- given the disenfranchisement of many formerly and currently incarcerated people-electoral politics.2 Parental and partner incarceration are associated with the increased risk of several mental and physical health problems, including cardiovascular disease, depression, and anxiety.3,4 Of relevance to many health outcomes, the economic costs of family member incarceration can be burdensome, including legal fees and fines, health care services copayments, and costs associated with visiting and communicating with incarcerated people.3 The stigma associated with family member incarceration can isolate some individuals from their social networks, blocking the social support that might buffer stressors related to family member incarceration.4

Less research attention has been given to the health impacts of mass incarceration on incarcerated peoples communities. Several studies indicate that high incarceration rates in an area change sexual networks and increase rates of sexually transmitted infections.2 It was also recently reported that living in a zip code with a higher prison admission rate is associated with an increased risk of depression and anxiety among nonincarcerated people.5 But large gaps persist in this literature.

Multilevel social epidemiologic frameworks and hierarchal modeling strategies are useful for research on the community health consequences of mass incarceration because they can (1) expand the focus beyond the health of incarcerated people, and (2) draw attention to the additional social, policy, and geographic contexts contributing to how mass incarceration shapes population health. Equally important, multilevel perspectives can center structural racism and inequitable distributions of incarceration across race/ethnicity, gender, and social class and their intersections. For example, Foster and Hagans multilevel social exclusion theory proposes that deliberate social policy decisions systematically disconnect children with incarcerated parents from opportunities for healthy development.4 Ecosocial theory6 can also be applied to understand racial/ethnic inequities in incarceration rates as the product of discriminatory policies and practices (including the war on drugs, three strikes laws, and broken windows policing) and as determinants of racial/ethnic health inequities.

Multilevel perspectives, too, allow researchers to link incarceration to population dynamics and social policies that collectively affect individual and community health. The criminal legal system, including jails, prisons, and policing practices, is just one of several interlocking institutions that act punitively to poor and, disproportionately, Black and Latinx people. To fully examine the impacts on population health and health inequities, it is critical to understand the relationships between incarceration, employment policies, the Supplemental Nutrition Assistance Program, the Special Supplemental Nutrition Program for Women, Infants, and Children, the foster care system, and other social policies.

Given the way incarceration intersects with many other determinants of health, for both incarcerated and nonincarcerated individuals, it follows that incarceration might matter for critical public health research and practice considerations; these include equitable program and policy implementation, study retention, and treatment adherence. However, the extent of such effects is impossible to know unless researchers and practitioners link

health and incarceration data at multiple levels.

data gaps and OPPORTUNITIES

Despite the importance of incarceration as a social determinant ofhealth and its relevance for public health practice, data resources on incarceration and policing for both individuals and geographic areas are limited. Few national public health surveys ask about jail, prison, or arrest histories or include and retain sufficient numbers of formerly incarcerated people and their families. Data sets that ask retrospectively about incarceration histories rarely ask about the precise timing or duration of multiple incarcerations, making these resources difficult for precise covariate control and consideration of etiologic lags. Questions about individual and family member incarceration and police interactions should be added prospectively.

Recently available data from the Vera Institute of Justice provide, for the first time, national jail and prison incarceration rates at the county level from the 1970s and 1980s to 2015. This resource can be easily linked to individualor county-level health data. Although counties are a relevant geographic level for the determinants of incarceration rates (e.g., local laws, policing, and judicial practices) and there is marked variation in county-level incarceration rates, aggregation at the county level is too high to reveal neighborhood or social network impacts. Incarceration rate data at geographic levels below the county level (e.g. census tracts) are available for only small areas and only over a few years and are usually acquired through agreements with local departments of correction, which are often hesitant to release it. Expanding national data resources at lower geographic areas is necessary for advancing research on the population health consequences of mass incarceration.

There are also promising policy changes and activist movements aimed at ending mass incarceration under way. Ending cash bail, diversion programs that prevent people from being charged or tried and changing school discipline policies, for instance, could have profound immediate and long-term implications for the health of individuals and communities. Linking health data to these policy changes is essential for their evaluation.

HOLDING GOVERNMENTS ACCOUNTABLE

Evaluating the health impacts of incarceration on families and communities prompts the question of whether mass incarceration is actually improving the public's well-being, let alone public safety. The literature challenges who counts as "the public" in claims about incarceration as a tool to protect the public, and, when seen through the lens of structural racism, it becomes clear that these claims have too often been invoked for racially unjust ends. Public health perspectives that center racial justice and health equity can be used to imagine alternatives to mass incarceration. Rather than addressing harm after it has happened, they can identify less punitive solutions to preventing crime that consider the poverty, racism, and political disenfranchisement that cause many individuals to turn to crime as a means of survival.

Public health researchers, practitioners, and activists should confront policymakers with the research on population health and health equity impacts ofmass incarceration. For example, the American Public Health Association's policy statement on law enforcement violence7 is a research-informed advocacy tool that can be replicated for other dimensions of mass incarceration, including cash bail, construction of new jail or prison facilities, and voting rights for currently or formerly incarcerated people. For research, multilevel analyses and frameworks are useful, although more transparent data sharing at lower geographic levels is needed. Both research and advocacy matter for holding state, local, and federal levels of government accountable for health impacts incurred by policies that contribute to high incarceration rates and racial inequities in these rates and for reckoning with the impact of structural racism on racial inequities in health. .4JPI-I

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Sidebar

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CONFLICTS OF INTEREST

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DETAILS

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Racial/Ethnic Differences in Drug- and Alcohol-Related Arrest Outcomes in a Southwest County From 2009 to 2018

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ABSTRACT (ENGLISH)

Objectives. To estimate the association between race/ethnicity and drug- and alcohol-related arrest outcomes. Methods. We used multinomial logistic regression and general estimating equations to estimate the association between race/ethnicity and arrest outcomes in 36 073 drug-and alcohol-related arrests obtained from administrative records in a Southwest US county from 2009 to 2018. Results were stratified by charge type. Results. Among

misdemeanor drug- and alcohol-related arrests, American Indian/ Alaska Native (AI/AN;adjusted odds ratio [AOR] = 3.60; 95% confidence interval [CI] = 3.32, 3.90), Latino (AOR = 1.53; 95% CI = 1.35, 1.73), and Black persons (AOR = 1.28; 95% CI = 1.05,1.55) were more likely than White persons to be booked into jail as opposed to cited and released. AI/AN (AOR= 10.77; 95% CI = 9.40, 12.35), Latino (AOR = 2.63;95% CI = 2.12, 3.28), and Black persons (AOR = 1.84;95% CI = 1.19, 2.84) also were more likely than White persons to be convicted and serve time for their misdemeanor charges. Results were similar for felony drug- and alcohol-related arrests aggregated and stratified. Conclusions. Our results suggest that race/ethnicity is associated with outcomes in drug-related arrests and that overrepresentation of racial/ethnic minorities in the criminal justice system cannot be attributed to greater use of drugs and alcohol in general. (Am J Public Health. 2020;110:S85-S92. doi:10.2105/AJPH.2019.305409)

FULL TEXT

Headnote

Objectives. To estimate the association between race/ethnicity and drug- and alcohol-related arrest outcomes. Methods. We used multinomial logistic regression and general estimating equations to estimate the association between race/ethnicity and arrest outcomes in 36 073 drug-and alcohol-related arrests obtained from administrative records in a Southwest US county from 2009 to 2018. Results were stratified by charge type. Results. Among misdemeanor drug- and alcohol-related arrests, American Indian/ Alaska Native (AI/AN;adjusted odds ratio [AOR] = 3.60; 95% confidence interval [CI] = 3.32, 3.90), Latino (AOR = 1.53; 95% CI = 1.35, 1.73), and Black persons (AOR = 1.28; 95% CI = 1.05,1.55) were more likely than White persons to be booked into jail as opposed to cited and released. AI/AN (AOR= 10.77; 95% CI = 9.40, 12.35), Latino (AOR = 2.63;95% CI = 2.12, 3.28), and Black persons (AOR = 1.84;95% CI = 1.19, 2.84) also were more likely than White persons to be convicted and serve time for their misdemeanor charges. Results were similar for felony drug- and alcohol-related arrests aggregated and stratified. Conclusions. Our results suggest that race/ethnicity is associated with outcomes in drug-related arrests and that overrepresentation of racial/ethnic minorities in the criminal justice system cannot be attributed to greater use of drugs and alcohol in general. (Am J Public Health. 2020;110:S85-S92. doi:10.2105/AJPH.2019.305409)

ore than 60% of criminal justice-involved individuals are racial/ethnic minorities, even though these groups make up just 30% of the US population.1,2 Black, Latino, and American Indian/Alaska Native (AI/AN) persons are more likely to be incar-cerated compared with White persons,1-3 and police interactions among racial/ethnic minorities are more likely to result in arrest, even after accounting for arrest decision-making by police.4

Of more than 10.5 million arrests made across the United States in 2017, 15% were drug-related, and 9% involved driving while intoxicated with alcohol.5 The War on Drugs has been credited with creating policies that significantly contribute to racial/ethnic and socioeconomic disparities in drug arrests,6 further embedding racial/ethnic disparities within the criminal justice system. Racial/ethnic minorities continue to be more likely than White individuals to be incarcerated for nonviolent substance-related offenses7,8 and imprisoned for drug charges.9 With regard to alcohol, racial/ethnic minorities are more likely to experience negative consequences, such as arrest and detainment for drinking, potentially because of perceived racial discrimination and racial/ethnic stigma.10 The Southwest United States, for example, has a long history of overrepresentation of AI/AN persons in the justice system2 specifically for alcohol-related offenses,11 yet AI/AN people in the Southwest have higher alcohol abstention rates than in the general population.12 Importantly, inherent bias toward AI/AN persons by law enforcement has been reported in towns that are in close proximity to tribal nations (i.e., border towns),13 presumably a more common occurrence than on tribal lands or in non-border towns. However, research on criminal justice outcomes among AI/AN individuals is limited.

Although it is clear that racial/ethnic minorities are overrepresented in the criminal justice system, it is less clear how outcomes at different points of interactions with the criminal justice system, including entry into the system, prosecution and pretrial services, adjudication, sentencing and sanctions, and corrections,14 differ by race/ethnicity, specifically for drug- and alcohol-related offenses. Thus, we aimed to estimate the association between race/ethnicity and arrest outcomes among individuals arrested for drug- or alcohol-related reasons in a rural

Southwest US county (the county) from 2009 to 2018.

METHODS

We used administrative arrest records from the county that tracked information about individuals from arrest to disposition (the final status ofan arrest). We created a retrospective cohort of individuals, according to their arrests and criminal charges (formal accusations asserting that somebody committed a crime) from January 1, 2009, through May 31, 2018 (Figure A, available as a supplement to the online version of this article at http://www.ajph.org). We excluded duplicated charges (administrative errors); charges with missing arrest dates, birthdates, and sex; charges with arrest dates before January 1, 2009, or after May 31, 2018; arrests among individuals younger than 18 years; and non- drug- and alcohol-related charges.

Drug- and alcohol-related arrests encompass all arrests involving drugs or alcohol as the primary reason for the charge (e.g., possession of marijuana, drunk and disorderly). Two team members independently reviewed arrest descriptions to identify drugand alcohol-related charges and then shared their lists. If discrepancies were found, team members discussed their rationale and, through consensus, agreed on a final list of charges.

Race/ethnicity was obtained from arrest records at an individual's first-observed arrest and categorized as AI/AN, Latino/Latina, Black, White, and other/unknown. Among AI/AN persons, tribal affiliation was not included. If race/ethnicity was missing at the first-observed arrest and an individual had more than 1 arrest with completed data fields, information from subsequent arrests was used. Those categorized as "other/unknown" were not included in analyses (n = 1286). Although a large proportion of the population identify as more than 1 race, arrest records were limited to an individual's primary race and ethnicity.

Arrest types are defined in Table A (available as a supplement to the online version of this article at http://www.ajph.org). Arrest type was categorized as cited and released at time of interaction with law enforcement (cited and released), arrested by establishing probable cause (on-view arrest), and fully booked into the custody of the county jail (booked into the county jail).

Reports of disposition, the final status of a criminal arrest, are defined in Table A. Disposition was categorized as cited and released, no charges filed following arrest, booked into the county jail and released (booked and released), released from the county jail on bond (bond), or convicted and served time for a crime in a correctional facility (convicted and served time).

Demographic information on age and sex was obtained from arrest records. Age was calculated using date of birth and categorized (18-24, 25-34, 35-44, 45-54, and >55 years). Older adults were categorized as 55 years or older based on previous research about accelerated aging among incarcerated individuals.15 Sex was categorized as male or female.

Charge type was categorized as a felony, misdemeanor, or summons (an order to appear before a judge or magistrate) and described in Table A. In the county, summons are included in arrest records and categorized separately. Because someone may have multiple charges during an arrest, we categorized the arrest as a felony if an individual had at least 1 felony charge during the arrest. Because our analyses were performed on the arrest level, we calculated the number of previous arrests at the time ofeach arrest. Ifan individual was arrested only once or it was a first-observed arrest, the number of previous arrests was zero.

Demographic and arrest characteristics were presented as counts and percentages or mean and SD. We used multinomial logistic regression to estimate adjusted odds ratios (AORs) and 95% confidence intervals (CIs) for the associations between race/ethnicity with arrest type and disposition. The multinomial logistic regression models for the association between race/ethnicity (referent = White) and arrest type estimated the likelihood of an on-view arrest or being booked into the county jail versus being cited and released (referent). The multinomial logistic regression models for the association between race/ethnicity and disposition estimated the likelihood ofno charges filed following arrest, being booked and released, bonding out, or being convicted and served time versus being cited and released (referent). We used generalized estimating equations to take clustering into account at the individual-person level by using a unique personal identification number assigned by the detention facility at first intake and continued for each subsequent incarceration. Because drug and alcohol use rates differ among racial/

ethnic groups, we present separate models for drug- and alcohol-related arrests, drug arrests, and alcohol arrests. Models were stratified by charge type (felony, misdemeanor, or summons) and adjusted for age, sex, and number of previous arrests. Models assessing associations among alcohol-related arrests were not stratified by charge type because of small sample sizes and were further adjusted for charge type. Models assessing the association between race/ethnicity and disposition also were controlled for arrest type.

All analyses were completed with SAS version 9.4 (SAS Institute, Cary, NC).

RESULTS

Our study population included 24 467 individuals who were arrested 36 073 times between January 1, 2009, and May 31, 2018 (Table 1). Those arrests resulted in 62 756 drug- or alcohol-related reasons for arrest. Alcohol-related charges (n = 16 781) accounted for more arrests than drug-related charges (n = 8111). Individuals with drug- and alcoholrelated arrests on average were aged 30.3 years 612.0, and 74% were male. Among all arrested for drug- and alcohol-related charges, 35% were AI/AN, 9% were Latino/ Latina, 4% were Black, and 51% were White. Compared with drug-related arrests, a higher proportion of those arrested for alcoholrelated offenses were AI/AN (24% vs 40%), and a lower proportion were Latino/Latina (12% vs 8%), Black (6% vs 2%), and White (57% vs 49%). Among drug- and alcohol-related arrests, AI/AN, Latino/Latina, and Black individuals were booked into the county jail more often than White individuals (Table 2), and this increased over the study period for all racial/ ethnic groups (Figure B, available as a supplement to the online version ofthis article at http://www.ajph.org). For disposition of arrest, AI/AN, Latino/Latina, and Black persons were convicted more often and were more likely to serve time for a crime in a correctional facility, whether in the county jail or at the department of corrections (prison), than White persons (Table 2; Figure C, available as a supplement to the online version of this article at http://www.ajph.org). Felony arrests were lowest among AI/AN people compared with all other racial/ethnic groups. The mean number of previous arrests differed by race/ethnicity and was higher for arrests among AI/AN (4.4 68.1), Latino/ Latina (2.1 65.3), and Black (1.6 63.8) persons compared with White persons (0.9 62.5). Results were similar for drug- and alcohol-related arrests separately (Table B, available as a supplement to the online version of this article at http://www.ajph.org).

Race/Ethnicity and Arrest Type

The multinomial logistic regression models estimated the likelihood of an on-view arrest or being booked into the county jail versus being cited and released at time of arrest (referent; Table 3). Among misdemeanor drug- and alcohol-related arrests, AI/AN (AOR = 3.60; 95% CI = 3.32, 3.90), Latino/Latina (AOR= 1.53; 95% CI = 1.35, 1.73), and Black (AOR = 1.28; 95% CI = 1.05, 1.55) individuals were more likely than White individuals to be booked into the county jail at the time of arrest. Similarly, among felony drug- and alcohol-related arrests, AI/AN (AOR = 1.67; 95% CI = 1.11, 2.25) and Latino/Latina (AOR = 1.65; 95% CI = 1.08, 2.54) were more likely than White persons to be booked into the county jail. Results were similar for those who were summoned (vs misdemeanor or felony) and for drug- and alcohol-related arrests, separately. AI/AN, Latino/Latina, and Black persons were also more likely to have an on-view arrest compared with White persons.

Race/Ethnicity and Disposition of Arrest

The multinomial logistic regression models estimated the likelihood ofno charges filed following arrest, being booked and released, bond, pending trial, or being convicted and served time versus being cited and released (referent; Table 4). Among misdemeanor drug- and alcohol-related arrests, AI/AN (AOR = 10.77; 95% CI = 9.40,12.35), Latino/Latina (AOR = 2.63; 95% CI = 2.12, 3.28), and Black (AOR = 1.84; 95% CI = 1.19, 2.84) persons were more likely than White persons to serve time for their charges. Among felony drug- and alcohol-related arrests, Latino/Latina individuals (AOR = 2.76; 95% CI = 1.67, 4.57) were more likely than White individuals to serve time for their charges. Drug- and alcohol-related arrests were not statistically significant for AI/AN or Black groups, potentially because of small sample size. Results were similar for those who were summoned and by drug- and alcoholrelated arrests separately. AI/AN, Latino/ Latina, and Black persons also were more likely to have no charges filed by the district attorney following an arrest or to be booked and released compared with White persons for all drug- and alcohol-related arrests as well as for drug- and alcohol-related arrests separately. Following a unique pattern, among

felony drug arrests, AI/AN persons were less likely to be released on bond compared with White persons (AOR = 0.60; 95% CI = 0.36, 0.98).

DISCUSSION

As a result ofhistorical and contemporary social, political, and economic factors, racial/ ethnic disparities in arrest outcomes persist.1 Our findings indicate substantial racial/ethnic disparities in arrest outcomes for drug- and alcohol-related crimes in a Southwest county over a 10-year period. AI/AN, Black, and Latino/Latina persons were more likely to be booked into the jail (compared with cited and released) on arrest and sentenced to serve time in the correctional system for their crimes, compared with White persons. Our findings of disparities in outcomes by race/ethnicity indicated potential explanations and implications at different stages of interactions with the criminal justice system, including arrest (entry into the system), prosecution and pretrial services, and adjudication and sentencing.14

Previous research examining racial disparities in drug distribution arrests found that Black adults were more likely to experience a drug distribution arrest, regardless of offending and neighborhood context, compared with White adults.16 In addition to the rate of offenses, interactions and outcomes with law enforcement differ by race/ethnicity. Police interactions among racial/ethnic minorities are more likely to result in arrest compared with White individuals, even after accounting for several competing factors related to arrest decision-making by police.4 Although degrees of magnitude for ORs differed, we found that AI/AN, Black, and Latino/Latina persons were more likely to have an on-view arrest or to be booked into the county jail compared with White persons.

Racial/ethnic minorities may be more likely to sell or use alcohol or drugs in public and semipublic locations, sell illicit substances to strangers, and engage in these practices more frequently than do White indidivuals.17 For example, AI/AN people may travel from dry reservations surrounding the county, where the sale ofalcoholic beverages is illegal, to areas bordering the reservation that are often more policed to obtain and consume alcohol.18 However, AI/AN populations and tribal policies in the US are heterogeneous, and the possession and consumption of alcohol are permitted in some tribal nations but not others. These high-risk practices may lead racial/ethnic minorities to be arrested and incarcerated more often and may motivate police to concentrate efforts in minority neighborhoods19 and thus lead to higher probabilities of arrest. Conversely, current movements toward higher policing of minor crimes, such as public drinking, specifically in communities of color, could possibly create community disorganization, which may lead to increased illegal activity.20 Consequently, location may play a role in high-risk substance using and selling behavior. These explanations could support that those with more criminal justice involvement may have stricter outcomes from their arrests because of the existence of a criminal record. Although we do not have specific details such as the neighborhood where the crime was committed, we found that a higher proportion of AI/AN, Latino/Latina, and Black people were previously arrested compared with White people. However, we cannot control for all criminal behaviors, a limitation of administrative records. Therefore, the explanation that minority populations are more likely to engage in high-risk substance using and selling behavior may not completely explain our findings.

Additionally, in the Southwest United States, anti-immigration policies have negatively affected Latino/Latina people. These federal and state policies subject communities to the saturation of and pervasive encounters with immigration officials, including local police enacting immigration enforcement.21 In 2010, Arizona passed the Arizona Senate Bill 1070 (SB1070), granting federal immigration law enforcement capabilities to local law enforcement to request proof of citizenship and immigration status from anyone suspected of being in the country unlawfully and legalized ethnoracial profiling and criminalization of Latino/Latina immigrants and nonimmigrants.22 Although SB1070 is no longer in effect, long-standing interest in racial/ethnic profiling in policing in not only Arizona but also the Southwest may be a source of disparities in arrest outcomes.

White persons were more likely than Black persons to be released pending trial,23 and Hispanic persons were less likely to receive a nonfinancial release option (release on recognizance) compared with White persons.24 Similarly, we found that AI/AN, Black, and Latino/Latina individuals were more likely to be released after being booked into the county jail and charged (vs cited and released) compared with White individuals. AI/AN, Black, and Latino/Latina

persons also were more likely to be released on bond (vs cited and released) compared with White persons. However, for felony drug-related arrests, AI/AN persons were less likely to be released on bond (vs cited and released) compared with all other racial/ethnic groups. Previous studies found a notable racial disparity during the decision to deny bail or to grant bail that individuals may not be able to afford.25 Compared with White individuals, a larger proportion of Black and Hispanic individuals were denied bail or held on bail versus a nonfinancial release option.24 After the authors controlled for bail amount, Black and Hispanic persons were significantly less able to post bail. Among individuals required to pay bail, the odds of detention for Black and Hispanic individuals were more than twice those for White individuals.24 We could not differentiate whether someone was denied bail or could not post bond or Although we have observed these disparities in the county, the criminal justice system in the county is far from alone in experiencing these issues. Nationally, we have seen racial/ethnic disparities in arrest rates4 and outcomes.8 Policy and procedure reform to change severity of sentencing, such as eliminating mandatory minimums for drug offenses and the 3-strike laws, must become a priority at the federal level to mitigate the growth of the criminal justice-involved population and racial inequities in the criminaljustice system.29 Front-end alternatives to arrest, prosecution, and incarceration such as diversionary programs, drug and alcohol courts, and community-based treatment are successfully reducing the number of those incarcerated30 and should be considered not only by court systems but also by city, state, and federal policymakers. Racial/ethnic minorities, however, are less likely than their White counterparts to be offered these alternatives.7 This may support our findings that AI/AN persons have more than 10 times the odds of being convicted and serving time for an alcohol-related arrest, and Black and Latino/Latina individuals have more than 2 times the odds ofbeing convicted and serving time for a felony drug-related arrest compared with White persons.

Potential Solutions

Our results suggest that racial disparities exist throughout the criminal justice system. Substantial changes to improve equity in the criminal justice system must include explicit and intentional racial justice strategies such as instituting reforms to reduce concentrated overpolicing, identifying alternatives to pretrial money bail, and implementing alternatives to incarceration (e.g., treatment services).31 These changes would require bipartisan, collective impact approaches on the local, state, and federal level in a group of systems that have historically operated independently of one another, perpetuating systematic biases while limiting their potential public health effect. Innovative policy and programmatic strategies at all levels of the US criminal justice system have emerged to address structural biases disproportionately affecting racial/ethnicity minority populations.32,33

A current step that the county has taken is establishing a multidisciplinary council to study the criminal justice systems in the county; identify areas for improvement; and formulate policy, plans, and programs for change. The formation of the council was the result of the increasing incarcerated population in the county jail and the recognition that without a coordinated and collaborative effort, punishment would take precedent over reform and rehabilitation. The county's council is a leading example in the United States of a countywide collaboration among county, municipal, and state criminal justice agencies (court systems, sheriffs offices, police, and probation); treatment providers; administrative departments; and concerned citizens to address issues and needs arising within the criminal justice system. The current research is a step toward characterizing the extent of the issue and beginning to address bias in arrest progression.

Public Health Implications

The growing criminal justice burden of drug- and alcohol-related crimes and related racial disparities may exacerbate the already established drug and alcohol public health crisis. This poses questions within the criminal justice system of how decisions are made concerning punishment of drug- and alcohol-related crimes. Punishing those with drug- or alcohol-related offenses historically has been seen as a crucial feature of the criminal justice system. On their faces, criminal laws and policies do not discriminate by punishing persons based on race/ethnicity differently. However, emerging research,1,2,4 along with our findings, indicates, in practice, that this may not be the case. Future work should consider the underlying factors that drive disparities in arrest outcomes for racial/ ethnic minorities and work toward community and collaborative interventions that consider equal access to alternatives to

incarceration to improve the burden of criminal justice involvement and mitigate the public health crisis. Additionally, future work should investigate the effects of current structural-level decriminalization and legalization of drug- and alcohol-related crimes and the shift from punishment to rehabilitation that may address racial inequities in the criminal justice system. ÂfPU

CONTRIBUTORS

R. Camplain and C. Camplain conceptualized the research question. R. Camplain also led quantitative analysis and took the lead on writing the article. C. Camplain also was the project coordinator and took a lead role in the writing of the article. R. T. Trotter II and J.A. Baldwin originated the study and served as Multiple Principal Investigators on the grant that funded the project. G. Pro assisted with analysis and with drafting and writing of the article. S. Sabo and E. Eaves assisted with the drafting and writing of the article. M. Peoples collaborated in the development of the article, served as the community partner, and assisted with the writing of the article. All authors read, edited, and approved the final version of the article.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

HUMAN PARTICIPANT PROTECTION

Data were provided by the county's detention facility through a data use agreement with the Northern Arizona University. Northern Arizona University's institutional review board approved this study. Informed consent was not required, and personal identifiable information was removed.

Sidebar

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5 Years Ago / 14 Years Ago

Anonymous

FULL TEXT

Mass Incarceration: A Clarion Call for Public Health

People in correctional facilities are among the unhealthiest and most medically underserved in society. Compared with the general population, they have significantly higher rates of infectious and chronic diseases. People with addiction and serious mental illness are gravely overrepresented in the criminal justice system: an estimated 16% of men and 31%of women in jail have a serious psychiatric condition, compared with 5% in the general population and at least 50% experience problems related to drug oralcohol use. Although access to health care within jails and prisons is constitutionally mandated, the quality of health care services in these settings lags far behind the standard of care in the community.

From AJPH, March 2014, p. 389

14 Years Ago

Missing Community Services and the Mass Migration to Prison

The United States is undergoing what has been provocatively described as one of the largest mass migrations in our nation's history. Every year, 630 000 residents will cross the border between the community and the correctional system, and they will make the journey virtually unseen and unheard. Many of these voiceless migrants might have stayed at home if they had only had access to comprehensive primary health care services, including substance use prevention and treatment services. . . . Was it our intention to replace the old mental health system with a prison industrial complex to stimulate economic development? Was it our goal to eliminate services for prisoners reentering our communities to ensure that they would repopulate the prisons when their health care needs were not addressed?

From AJPH, October 2005, p. 1676

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Psychological Distress in Solitary Confinement: Symptoms, Severity, and Prevalence in the United States, 2017–2018

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ABSTRACT (ENGLISH)

Objectives. To specify symptoms and measure prevalence of psychological distress among incarcerated people in long-term solitary confinement. Methods. We gathered data via semistructured, in-depth interviews;Brief Psychiatric Rating Scale (BPRS) assessments;and systematic reviews of medical and disciplinary files for 106 randomly selected people in solitary confinement in the Washington State Department of Corrections in 2017. We performed 1-year follow-up interviews and BPRS assessments with 80 of these incarcerated people, and we present the results of our qualitative content analysis and descriptive statistics. Results. BPRS results showed clinically significant symptoms of depression, anxiety, or guilt among half of our research sample. Administrative data showed disproportionately high rates of serious mental illness and self-harming behavior compared with general prison populations. Interview content analysis revealed additional symptoms, including social isolation, loss of identity, and sensory hypersensitivity. Conclusions. Our coordinated study of rating scale, interview, and administrative data illustrates the public health crisis of solitary confinement. Because 95% or more of all incarcerated people, including those who experienced solitary confinement, are eventually released, understanding disproportionate psychopathology matters for developing prevention policies and addressing the unique needs of people who have experienced solitary confinement, an extreme element of mass incarceration. (Am J Public Health. 2020;110:S56-S62. doi:10.2105/AJPH.2019.305375)

FULL TEXT

Headnote

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Methods. We gathered data via semistructured, in-depth interviews;Brief Psychiatric Rating Scale (BPRS) assessments;and systematic reviews of medical and disciplinary files for 106 randomly selected people in solitary confinement in the Washington State Department of Corrections in 2017. We performed 1-year follow-up interviews and BPRS assessments with 80 of these incarcerated people, and we present the results of our qualitative content analysis and descriptive statistics.

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Conclusions. Our coordinated study of rating scale, interview, and administrative data illustrates the public health crisis of solitary confinement. Because 95% or more of all incarcerated people, including those who experienced solitary confinement, are eventually released, understanding disproportionate psychopathology matters for developing prevention policies and addressing the unique needs of people who have experienced solitary confinement, an extreme element of mass incarceration. (Am J Public Health. 2020;110:S56-S62. doi:10.2105/AJPH.2019.305375)

Long-term solitary confinement expanded across the United States in the 1980s; by 1997, nearly every state had built a "supermax," creating an estimated total of 20 000 new solitary cells.1,2 Human rights agencies characterize the practice as torture3,4; policy analysts criticize it as expensive and ineffective.2,4 Yet the epidemiological basis for understanding solitary confinement is weak. Current estimates of the annual US solitary confinement population vary from 80 000 to 250 000.5,6 Likewise, the conditions (how much isolation with how few privileges), purposes (discipline, protection, or institutional security), and labels (administrative segregation, supermax, restrictive housing, intensive management) defining solitary confinement are contested.2,5,6 Many studies document psychological harms of segregation, including associations between solitary confinement and self-harm, anxiety, depression, paranoia, and aggression, among other symptoms,7-9 but other recent findings suggest that psychological impacts are limited.10-12 Correctional officials use solitary confinement at their discretion, often with few procedural protections, limited available alternative responses, and no external oversight.2 Researchers and policymakers are therefore limited not only in access to data and populations, but also by these populations' fluidity.

A standard instrument for assessing psychological impacts ofincarceration is the Brief Psychiatric Rating Scale (BPRS). Originally developed to rate the severity ofsymptoms in hospitalized psychiatric patients and track changes in status over time,13,14 the BPRS is increasingly used for research within carceral settings.12,15,16,17 The current scale assesses 24 observable or self-reported symptoms. Extensive research on the BPRS's reliability and validity confirms its efficacy in identifying indicators of serious mental illness.14

In Washington State, interviewers administered the BPRS to a random sample of 87 incarcerated people during qualitative interviews (and also conducted 122 medical chart reviews),1,9,15 concluding that solitary confinement reveals "a concentration of some of the most important negative effects of the entire prison complex. "1(p1692) In a widely cited subsequent study, in Colorado, the BPRS was included in a battery of tests designed to measure psychological "constructs" associated with solitary confinement (for 270 matched participants), but generated few reliable results. The study relied on a pencil-and-paper test, the Brief Symptom Inventory, "a 53-item self-report measure . . . to assess a broad range of psychological symptoms," and concluded that people in solitary confinement sometimes experienced improvements in their psychological wellbeing, and those with mental illnesses did not deteriorate over time.11(p52)

Our study builds on these investigations, relying not only on psychometric instruments but also on mental and physical health and disciplinary records and in-depth interview data to assess the psychological well-being of 106 randomly sampled incarcerated people in long-term solitary confinement in the Washington State Department of Corrections (WADOC) from 2017 to 2018. Triangulation of sources gives this study a robust basis for understanding the psychological effects of solitary confinement.

METHODS

WADOC is a midsized (39th highest rate of incarceration in the United States), fully state-funded correctional system with a long history of inviting academic researchers to independently evaluate carceral practice.1,9,18,19 Fieldwork was conducted over 2 separate 3-week periods in the summers of 2017 and 2018, by a total of 13 research team members (9 women and 4 men) all affiliated with the University of California, Irvine. In total, 106 incarcerated people were interviewed in 2017, and 80 incarcerated people were reinterviewed in 2018. We also collected medical and disciplinary data, including serious mental illness (SMI) and self-harm data.

Sample and Data Collections

WADOC has 5 geographically dispersed intensive management units (IMUs); people in these all-male units have usually violated an in-prison rule and are in solitary confinement for durations ranging from months to years, with highly restricted access to phones, radios, televisions, time out of cell, and visitors. As a result of WADOC efforts to reform and reduce IMU use, the population in these units fluctuated, with a high of more than 600 (in 2011) to a low of286 incarcerated people (in 2015) on "maximum custody" status: for indeterminate terms, contingent on meeting specific benchmarks.20 In 2017, when the initial sample for this research was drawn, there were 363 maximum custody status people assigned to the IMU.

We selected participants from a randomly ordered list in proportion to the population of each IMU, accounting for

29% of the total population in each of the 5 units. For recruitment and consent processes, see Appendix A (available as a supplement to the online version of this article at http://www. ajph.org). The interview refusal rate was 39% (67 out of 173 approached), comparable to similar studies of incarcerated people.9,21

The 96-question semistructured interview instrument included a range of questions used in previous studies on incarcerated people s experiences, covering conditions of daily life, physical and mental health treatment, and IMU programming. BPRS self-report items were embedded throughout the interview; we evaluated observational items immediately following each interview.24 Interviews lasted between 45 minutes and 3 hours.

Following interviews, participants were given an option to consent to medical file reviews and to participate in 1-year follow-up interviews. All participants consented to reinterviews, and all but 2 participants (n = 104) consented to medical file reviews. Following year-1 interviews, WADOC provided electronic administrative health and disciplinary files for all 104 consenting participants (along with comparable, population-level data for the prison system in 2017).

In summer 2018, the research team returned to Washington and reconsented and reinterviewed every available participant -notably including those no longer housed in the IMU-for a total of 80 reinterviews. Because of refusals (n = 4), institutional transfers and parole (n = 21), and 1 death, we were unable to follow-up with 26 respondents (25%). This drop-out rate is low compared with similar studies.25,26 Follow-up interviews lasted between 45 minutes and 2 hours. The condensed year-2 instrument contained approximately 70 questions, with variation by current housing status.

For the steps taken to protect vulnerable imprisoned research participants and details of the training research team members completed, establishing high interrater reliability in administering the BPRS,24 see Appendix A (available as a supplement to the online version of this article at http://www. ajph.org).

Data Analysis

All interviews were assigned a randomly generated identifier, digitally recorded, transcribed in Microsoft Word (Microsoft Corporation, Redmond, WA), translated (1 interview was conducted in Spanish), systematically stripped of identifying details (names, dates of birth), and entered into Atlas-ti (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany) for analysis. See Appendix A for an explanation of the thematically grounded, open-coding process.27 We entered all BPRS paper rating sheets, completed following year-1 and year-2 interviews, into Microsoft Excel (Microsoft Corporation, Redmond, WA). We linked each participant's BPRS rating, by random identifier, to extracted data from qualitative interviews, medical file reviews, and administrative data from WADOC.

Relevant variables extracted from administrative health data included SMI, a critical classification because it implies that treatment is medically necessary and, therefore, is an obligation of the prison system while the person is under its care. WADOC operationally defines SMI by standardized criteria combining diagnosis, medication, and frequency of psychiatric encounters, and history of suicide attempts or other self-harm.

We then imported BPRS and other administrative data into SPSS version 26 (IBM, Armonk, NY) to generate descriptive statistics, including prevalence of clinically significant ratings on BPRS items and factors (subscales of co-occurring symptom groups), including positive symptoms (unusual thought content, hallucinations, conceptual disorganization), negative symptoms (blunted affect, emotional withdrawal, motor retardation), depression-anxiety-guilt symptoms (including somatic concerns; DAGS), and mania (excitability, elevated mood, hyperactivity, distractibility).14 We ran correlational analyses (cross-tabs and t test) to evaluate the relationships between BPRS ratings and other independent assessments ofwell-being, such as existing diagnosis of SMI.

RESULTS

See Table 1 for summary characteristics of the all-male participant population (there are no women in IMUs in WADOC) and the general WADOC population. As in other studies of solitarily confined incarcerated people,6 our sample was generally younger, more violent (in terms of criminal history), and serving longer sentences than those in the general population. Latinos and gang affiliates are both overrepresented in our IMU sample, likely because of the salience of conflicts among rival Latino factions as an institutional security concern.2 Although our IMU participants differed from the general prison population, there were no significant differences in either demographic variables or criminal history characteristics between our random sample and the overall IMU population, except that

our participant pool was slightly older than the overall IMU population.

Range and Prevalence of Psychological Symptoms Identified

Our initial sample of 106 participants had a mean BPRS rating of 37 and a median rating of 33 (possible range from 24 to 168), suggesting mild psychiatric symptoms among the study population at the time of our interviews.14 However, analysis of individual scale items showed clinically significant ratings (of 4 or higher of a possible 7) for as much as one quarter of the population sampled, especially for the depression and anxiety symptoms (Table 2). Further analysis of BPRS factors, as opposed to individual items, provided additional evidence of clinically significant psychiatric distress in as much as half of the population sampled (i.e., DAGS factor; Table 2).

Administrative data support the finding of long-term psychological distress. Among our respondents, 19% had SMI designations, 22% had a documented suicide attempt, and 18% had documentation of other self-harm, all at some point during their incarceration, either before or during their time in the IMU (Table 1). Moreover, respondents with SMI designations were much more likely to report positive symptoms and slightly more likely to report all other factored symptoms than non-SMI respondents (Table 3). These findings support the validity of the BPRS assessments.

Qualitative interview data revealed symptoms not otherwise captured by the BPRS and medical files. (Such data will be used illustratively here, for reasons of space, and will be considered exhaustively in subsequent analyses). Two classes of symptoms were reported by a majority of respondents: descriptions of the severity of the emotional toll ofbeing in the IMU (80% of respondents; cumulatively, the topic was mentioned 359 times) and feelings of social isolation (73% of respondents; cumulatively, the topic was mentioned 192 times). This interview excerpt exemplifies the "emotional toll" descriptions:

I bet you couldn't walk in my shoes because all the stuff you got to endure behind these walls of pain. There's a lot you got to go through . . . [and] I've been doing this for 11 years. . . people adapt to their surroundings, but to get used to this life, I don't [think] you can. (Michael, a pseudonym, as with all subsequent quotations)

And this quotation exemplifies social isolation:

You're not around people. I'm around somebody right now with handcuffs and shackles on like I'm an animal. It's dehumanizing. No human contact. As [a] human being, I feel like we're meant to socialize, and it does have an effect on your mentality while you're sitting in the cell. (Chase)

Two additional symptoms were as prevalent as other clinically significant BPRS items like anxiety: references to sensory hypersensitivity (16% of respondents mentioned this at least once) and loss of identity (25% of respondents mentioned this at least once). Respondents discussed hypersensitivity to sounds, smells, "[and . ..] tiny things" (Giovanni). In particular, the sounds of doors opening and closing aggravated many respondents:

All you got to do is hold it. I mean, you don't got to slam it. It's like [correctional officers] showing theirpower.... That ain't cool. You wouldn't do that in your house, would you? (Tyler).

Respondents also talked about the institution taking over their identity:

I've been in the hole so long that it defines the person. If you've been in the box for so long, you can'tplay well with others... .We're so confined in that box. It's like a safety blanket. (Eli).

Another respondent echoed a frequent complaint about the lack of mirrors contributing to the loss of identity:

This IMU has mirrors in the cell. The majority of them do not. And it gets really stressful when you can't even see your own reflection. ... I mean when you can't even look at yourself,you lose some of your self-identity. (Eric)

Comparing Symptoms in and out of Solitary Confinement (2018)

Ofthe 80 respondents reinterviewed in the second year of this study, 28 were in IMU custody and 52 were in the general prison population. These 2 subpopulations provide important comparison groups between IMU residents and people in the general population, because all initially entered the study through a random sample of IMU residents. These subpopulations also provide a longitudinal view of how incarcerated people experience IMU conditions over 1 year and how they recover from these conditions as they re-enter the general population. In Table 2, we compare, cumulatively by subpopulation, symptom and factor scores in 2017 for IMU residents to 2018 scores for IMU respondents and respondents not in the IMU. For respondents still in the IMU in 2018, all clinically significant

symptoms that were prevalent among at least 10% of the population were at least as prevalent in 2018, and 2 clinically significant factor scores were more prevalent (positive, DAGS). For respondents not in the IMU in 2018, the prevalence of clinically significant symptoms varied from more prevalent than in the 2017 sample (e.g., anxiety) to less prevalent (e.g., somatic concerns and guilt), and factor scores were either lower (i.e., positive, negative, DAGS) or similar (for mania) for respondents not in the IMU in 2018. Despite having an exceptionally large sample size for a study ofa solitary confinement population, our study was not powered to establish statistically significant differences between the 2017 and 2018 data sets.

DISCUSSION

In this study, we combined qualitative interview data with structured, quantitative measures of psychological and psychiatric outcomes in solitary confinement among 106 randomly sampled incarcerated people in Washington State, documenting both a wide range and high prevalence of symptoms of psychological distress. We highlight 4 major implications of this.

First, while the overall BPRS ratings we analyzed indicated limited psychological distress, as documented in earlier studies,11,12 a closer examination of specific items and factors revealed that as many as half of respondents had at least 1 clinically significant symptom within the BPRS anxiety-depression factor. Because other studies using the BPRS in solitary confinement settings employed earlier 18-item versions of the scale,15 used the scale in combination with other scales,11 or analyzed only total ratings,12 our findings are not directly comparable with those in other BPRS studies. However, our findings are consistent with other studies, including findings that 20% or more of Washington incarcerated people in solitary exhibited a "marked or severe degree of distress,"15(p774) and that more than half of California incarcerated people in solitary reported "symptoms of psychological distress."28(p133) Our findings therefore highlight the importance of analyzing specific components of BPRS scores, and not only aggregates, which mask variation in both prevalence and severity of specific symptoms.

Second, administrative data confirmed that our participants had relatively high rates ofdocumented mental health problems, including rates of SMI and self-harming behavior (Table 1). SMI rates, typically estimated at 10% to 15% of prison populations,8,29 are measured at 9% in Washington's general prison population but 20% in our IMU sample. Likewise, our qualitative data confirmed that people in solitary confinement experience symptoms specific to those conditions not captured in standard psychiatric assessment instruments.30 Both findings suggest an affirmative answer to the question ofwhether solitary confinement is associated with more and worse psychopathology than general population confinement. As longitudinal case studies have illustrated,9,30 disproportionate representation of incarcerated people with psychopathology in solitary confinement reflects the interaction of clinical and security factors in prison custody decisions: solitary confinement responds to behavior expressing psychopathology, often undiagnosed, and also aggravates the propensity of some incarcerated people to break down or act out.31 For these reasons, the causal role of solitary confinement is not established by aggregate comparisons of IMU and non-IMU populations.

Third, the comparisons we were able to make across multiple sources of data allowed us to identify a broader range ofsymptoms of distress than studies that have focused on only 1 or 2 sources of data, such as administrative data,8 psychiatric assessments,11 or qualitative interviews.28,30 Symptoms such as anxiety and depression were especially prevalent in this population, along with symptoms ostensibly specific to solitary confinement, such as sensory hypersensitivity and a perceived loss of identity (as found in other studies exploring solitary-specific symptoms).

Finally, consistent with previous studies,11,12 we found that the prevalence of psychiatric distress did not significantly increase over time for incarcerated people that either stay or are released from the IMU 1 year later. Yet our qualitative data suggest that the BPRS may not be capturing actual psychopathology, as respondents pointed to psychiatric distress-in profoundly existential terms, as in the previously mentioned quotations regarding selfhood and identity-beyond the 2-week time period evaluated by the BPRS and outside the scope of the instrument. Moreover, although symptoms were not cumulatively found to worsen, they did persist at high rates, for incarcerated people in and out of the IMU, in 1-year follow-up assessments. These latter findings are also consistent with other studies,

underscoring the need for additional research comparing incarcerated people's experiences across different contexts and over time.

Limitations

Five specific limitations are especially notable. First, although our initial sample was relatively large for a solitary confinement population, our 1-year follow-up group, especially the number of respondents remaining in solitary confinement in the second year, was relatively small, limiting our ability to establish statistically significant findings about change over time and across contexts from BPRS data. Second, as our interview results revealed, the BPRS does not capture the full spectrum ofpsychiatric distress incarcerated people experience in solitary confinement. Third, assessments of psychological well-being would ideally occur at multiple times, beyond the 2 we were able to conduct within the constraints of this multimethod study. Fourth, Washington State is not representative ofmost state prison systems in terms of the prevalence of people with mental illnesses in solitary confinement, as WADOC has undertaken reforms in both treatment of mental illness and imposition of solitary confinement over the past 20 years, including reforms designed to divert people with serious mental illness to specialized treatment units.33 Moreover, these reforms have radically improved systematic mental health record-keeping; we would expect not only a lower prevalence of psychiatric symptoms and less deterioration in WADOC in IMUs but also a higher rate of documentation of those symptoms that are present. Finally, although people in solitary confinement may exhibit distinctive or disproportionately severe psychopathology, causal inference regarding the relationship between solitary confinement and psychopathology is beyond the analysis we are able to perform here.

Conclusions and Implications

We found a wide range and high prevalence of symptoms of psychiatric distress in this population, including BPRS symptoms associated with anxiety and depression among as many as half of our participants, administrative indicators of SMI among at least one fifth of our participants, and conditionspecific symptoms, such as feelings ofextreme social isolation, in well more than half of our participants. Moreover, these symptoms persisted in the second year for participants in and out of solitary confinement.

Ifwe study people in solitary confinement solely with instruments validated with nonincarcerated populations, such as the BPRS, we may fail to capture the extent of incarecerated people's psychological distress. A respondent's rating on a given symptom may not be "high enough"; symptoms may not be experienced within the instrument's designated time frame; or the discursive strategies incarcerated people use to articulate their suffering might not correspond with clinical language. Moreover, past research reveals that incarcerated people develop coping mechanisms for solitary,1,2,32 and these, along with the fact that speaking openly about psychological distress conflicts with institutional norms of self-protection in prison,1,2,30 likely contribute to a systematic underreporting of distress. These are critical limitations of standardized assessments of incarcerated people whose symptoms may fluctuate substantially in presence and severity during time in solitary.1,7,32 Apart from symptoms or their severity, this fluctuation, itself, is an integral aspect of incarcerated people's psychological distress,34 but a need for repeated measurement makes it especially difficult to capture.

Our findings still point to the importance of using standardized instruments, which provide a baseline for assessing and interpreting the psychological effects of solitary confinement. Nonetheless, additional sources of evidence-interviews, clinician observations, staff observations, medical files-are crucial for capturing the range of symptoms that people in solitary exhibit, and those symptoms' prevalence, duration, and severity over time. Without the benefit of mixed methods and improved instruments, researchers and policymakers alike will continue not only to lack desired data but also to not know what data we lack. Increasing the transparency of both conditions of confinement and the associated health effects is critical to both question formulation and data gathering.

As 5% to 15% of the United States' 1.6 million incarceratedpeople are held in solitary confinement for at least part of their incarceration,5,6 and virtually all of those people will be released, all members ofsociety have a vested interest in limiting the induction of psychopathology suggested by findings such as those presented here. At least some of the symptoms we described here, including identity loss and hypersensitivity, resulted directly from specific conditions of confinement, such as the absence of mirrors and the repetitive slamming of doors. To the extent that

solitary is meant to make people more manageable, its association with psychopathology calls into question its usefulness, let alone its justice. And to the extent that solitary confinement has any causative role in psychopathology, our collective goal should be prevention. >4jPI-l

CONTRIBUTORS

K. Reiter served as principal investigator on this study, led data collection and analysis, and conceptualized and led the writing ofthis article.J. Ventura trained the study team in applying the Brief Psychiatric Rating Scale (BPRS), consulted on data collection and analysis, and participated in writing this article. D. Lovell consulted on study design and data collection, led the analysis ofadministrative data, and participated in writing this article. D. Augustine, M. Barragan, K. Chesnut, P. Dashtgard, G. Gonzalez, N. Pifer, and J. Strong participated in project design, participant interviews, data analysis, and writing of this article. K. Chesnut also served as project manager and, with P. Dashtgard, participated in administrative data and BPRS analysis. T. Blair consulted on data analysis and participated in writing this article.

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Note. The views expressed here are those of the authors and do not necessarily represent those of the Washington DOC or other data file contributors. Any errors are attributable to the authors.

CONFLICTS OF INTEREST

None of the authors have conflicts of interest to declare.

HUMAN PARTICIPANT PROTECTION

This study was approved by the institutional review board at the University of California, Irvine (HS 2016-2816).

Sidebar

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DETAILS

Subject:	Research; Population; Public health; Assessments; Content analysis; Psychological stress; Mental disorders; Self destructive behavior; Guilt; Solitary confinement; Prisons; Statistical analysis; Prevention; Hypersensitivity; Interviews; Psychopathology; Literature reviews; Qualitative analysis; Anxiety; Self-injury; Social identity; Data; Mental health; Imprisonment; Mental depression; Social interactions; Confinement; Statistics; Social isolation; Medicine; Prisoners; Psychological distress; Symptoms; General public; Ratings &rankings
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Widdowson, A. O., PhD., & Fisher, B. W., PhD. (2020). Mass incarceration and subsequent preventive health care: Mechanisms and Racial/Ethnic disparities. American Journal of Public Health, Suppl.Supplement 1, 110, S145-S151. doi:https://doi.org/10.2105/AJPH.2019.305448

Objectives. To examine the associations and mechanisms between 2 indicators of mass incarceration and preventive health care use and whether these associations are moderated by race/ethnicity. Methods. We used 1997 to 2015-2016 data from the US National Longitudinal Survey of Youth 1997 (n = 7740) to examine the associations between arrest and incarceration at ages 18 to 27 years and cholesterol, blood sugar, and blood pressure screenings at age 29 years. Explanatory mechanisms included blocked access (health care coverage and medical checkup) and economic (education, employment, and income) factors. We used logistic regression to model main effects. Conclusions. Mass incarceration contributes to decreases in preventive health care use, which are explained in part by blocked access and economic factors. Public Health Implications. The decreased use of preventive health care following mass incarceration may increase the prevalence of disease and the associated costs of treatment. (Am J Public Health. 2020;110:S145-S151. doi:10.2105/AJPH.2019.305448) Results. Arrest was associated with lower odds of getting blood cholesterol, blood sugar, and blood pressure tests;incarceration was associated with lower odds of getting cholesterol and blood sugar tests; blocked access and economic factors mediated 42% to 125% of these associations. These associations were mostly consistent across race/ ethnicity.

Wolff, H., & Greifinger, R. (2020). Incarceration harms health: Homer venters's book on rikers island jails. American Journal of Public Health, Suppl.Supplement 1, 110, S9-S10. doi:https://doi.org/10.2105/AJPH.2019.305445

Bowleg, L., Del Río-gonzález, A. M., Mbaba, M., Boone, C. A., & Holt, S. L. (2020). Negative police encounters and police avoidance as pathways to depressive symptoms among US black men, 2015–2016. American Journal of Public Health, Suppl.Supplement 1, 110, S160-S166. doi:https://doi.org/10.2105/AJPH.2019.305460

Objectives. To examine negative police encounters and police avoidance as mediators of incarceration history and depressive symptoms among US Black men and to assess the role of unemployment as a moderator of these associations. Methods. Data were derived from the quantitative phase of Menhood, a 2015-2016 study based in Washington, DC. Participants were 891 Black men, 18 to 44 years of age, who completed computer surveys. We used moderated mediation to test the study's conceptual model. Results. The results showed significant indirect effects of incarceration history on depressive symptoms via negative police encounters and police avoidance. Unemployment moderated the indirect effect via police avoidance. Participants with a history of incarceration who were unemployed reported significantly higher police avoidance and, in turn, higher depressive symptoms. Moderation of unemployment on the indirect effect via negative police encounters was not significant. Conclusions. There is a critical need to broaden research on the health impact of mass incarceration to include other aspects of criminal justice involvement (e.g., negative police encounters and police avoidance) that negatively affect Black men's mental health. (Am J Public Health. 2020;110:S160-S166. doi:10.2105/AJPH.2019.305460)

Purtle, Jonathan,D.R.P.H., M.Sc, Gebrekristos, L. T., M.P.H., Keene, D., PhD., Schlesinger, P., Niccolai, L., PhD., & Blankenship, K. M., PhD. (2020). Quantifying the restrictiveness of local housing authority policies toward people with criminal justice histories: United states, 2009–2018. American Journal of Public Health, Suppl.Supplement 1, 110, S137-S144. doi:https://doi.org/10.2105/AJPH.2019.305437

Objectives. To quantify variation in the restrictiveness of local public housing authority policies related to the admission and eviction of people with criminal justice histories. Methods. We conducted content analysis of housing authority policy documents for US cities with a population of 100 000 or more (n = 152). Factor analysis identified policy provisions to create a restrictiveness score (range = 0-8). We explored associations between restrictiveness scores and city-level measures of racial/ethnic diversity, racial/ ethnic neighborhood segregation, ideology, and public housing scarcity. Results. Eight policy provisions, 6 relating to consideration of mitigating circumstances, explained 71.0% of the variance in housing authority policy provisions related to criminal justice histories. We

observed small but significant positive associations between restrictiveness scores and racial/ethnic diversity (r =0.22) and neighborhood segregation (r =0.18). There was no correlation between restrictiveness scores of housing authorities within the same state (intraclass correlation = 0.0002). Conclusions. Housing authority policies vary substantially regarding the circumstances under which people with criminal justice histories can obtain and retain public housing. Exposure to constellations of policy provisions that might institutionalize health inequities and increase health risk among people with criminal justice histories can be quantified through a systematic process. (Am J Public Health. 2020;110:S137-S144. doi: 10.2105/AJPH.2019.305437)

Farrell, C. M.,D.O.M.P.H., & Gottlieb, A., PhD. (2020). The effect of health insurance on health care utilization in the justice-involved population: United states, 2014–2016. American Journal of Public Health, Suppl.Supplement 1, 110, S78-S84. doi:https://doi.org/10.2105/AJPH.2019.305399

Objectives. To examine the impact of health insurance coverage on utilization of outpatient, hospital, and emergency department care among justice-involved individuals in the United States. Methods. We performed repeated cross-sectional analyses with data from the National Survey of Drug Use and Health. The study population included 6086 adults with justice involvementwithin the pastyear.We used logistic regression to examine the odds of health care utilization based on either a dichotomous or categorical measure of health insurance coverage. We used negative binomial regression to examine the number of times a specific type of care was utilized with both a dichotomous measure of health insurance coverage and a categorical measure of type of health insurance. Results. Health insurance was associated with increased utilization of outpatient, inpatient, and emergency department care. Conclusions. Health insurance coverage was associated with increased utilization of outpatient, inpatient, and emergency department health care among justice-involved individuals. Therefore, expanding access to health insurance in this population has the potential to increase care utilization of all types and decrease barriers to medical services. (Am J Public Health. 2020;110:S78-S84. doi:10.2105/AJPH.2019.305399)

Barnert, Elizabeth S, MD,M.P.H., M.S., Lopez, N., B.S., & Chung, Paul J,M.D., M.S. (2020). Barriers to health care for latino youths during community reentry after incarceration: Los angeles county, california, 2016–2018. American Journal of Public Health, Suppl.Supplement 1, 110, S63-S70. doi:https://doi.org/10.2105/AJPH.2019.305374

Objectives. To examine barriers to health care for Latino youths during reentry after incarceration. Methods. For this in-depth qualitative study, we conducted 69 semistructured interviewswith 22 Latinoyouths and theirparentsat 1,3,and 6monthsafterincarceration. We performed thematic analysis of interview transcripts, from which a preliminary conceptual model emerged describing barriers to care for Latino youths. We then conducted trajectory analyses of dyadic youth-caregiver pairs to test the conceptual model. We collected longitudinal interviews in Los Angeles County, California, from November 2016 to March 2018. Results. Beyond recognized stressors experienced by youths during reentry, most of which families related to poverty and neighborhood environment, Latino youths also experienced cultural barriers to care (i.e., self-reliance and pride, religiosity and reproductive care as taboo, preference for home remedies, language) as well as barriers to care because of undocumented status (i.e., fear of deportation, job insecurity). Conclusions. Reentry is challenging, and Latino youths face additional barriers to care during reentry related to culture and legal status, but have cultural strengths. Increased access to culturally sensitive, safety-net health care, regardless of immigration status, may reduce health inequalities for Latinoyouths undergoing reentry. (Am J Public Health. 2020;110:S63-S70. doi:10.2105/AJPH.2019.305374)

Sundaresh, R., M.S., Yi, Y., M.A., Roy, Brita,M.D., M.P.H., Riley, Carley,M.D., M.P.P., Wildeman, C., PhD., & Wang, Emily A,M.D., M.A.S. (2020). Exposure to the US criminal legal system and well-being: A 2018 cross-sectional study. American Journal of Public Health, Suppl.Supplement 1, 110, S116-S122. doi:https://doi.org/10.2105/AJPH.2019.305414

Objectives. To assess the association between exposure to the US criminal legal system and well-being. Methods. We used data from the 2018 Family History of Incarceration Survey, a nationally representative cross-sectional study of family incarceration experience (n = 2815), which includes measures of participants' own criminal legal system exposure, including police stops, arrests, and incarceration. We measured well-being across 5 domains-

physical, mental, social, spiritual, and overall life evaluation-and analyzed trends in well-being by criminal legal system exposure using logistic regression. Results. Exposure to police stops, arrests, and incarceration were each associated with lower well-being in every domain compared with those not exposed. Longer durations of incarceration and multiple incarcerations were associated with progressively lower well-being. Those who were stopped and frisked by the police had low well-being similar to that of those who had been incarcerated multiple times. Conclusions. Any exposure to police contact or incarceration is associated with lower well-being in every domain. More involved exposure is associated with even lower well-being. Public Health Implications. Jail diversion and broader criminal justice reform may improve population-level well-being by reducing police contact and incarceration. (Am J Public Health. 2020;110:S116-S122. doi:10.2105/AJPH.2019.305414)

Hayes, C. M., M.S.W., Sufrin, C.,M.D.PhD., & Perritt, J. B.,M.D.M.P.H. (2020). Reproductive justice disrupted: Mass incarceration as a driver of reproductive oppression. American Journal of Public Health, Suppl.Supplement 1, 110, S21-S24. doi:https://doi.org/10.2105/AJPH.2019.305407

We describe how mass incarceration directly undermines the core values of reproductive justice and how this affects incarcerated and nonincarcerated women. Mass incarceration, by its very nature, compromises and undermines bodily autonomy and the capacity for incarcerated people to make decisions about their reproductive wellbeing and bodies; this is done through institutionalized racism and is disproportionately done to the bodies of women of color. This violates the most basic tenets of reproductive justice—the right to have a child, not to have a child, and to parent the children you have with dignity and in safety. By undermining motherhood and safe pregnancy care, denying access to abortion and contraception, and preventing people from parenting their children at all and by doing so in overpoliced, unsafe environments, mass incarceration has become a driver of forms of reproductive oppression for people in prison and jails and in the community.

Wennerstrom, A., Reilly, B., Henderson, N., Sugarman, M., & Niyogi, A. (2020). Promoting health equity and criminal justice reform: The louisiana experience. American Journal of Public Health, Suppl.Supplement 1, 110, S19-S20. doi:https://doi.org/10.2105/AJPH.2019.305446

Currently, 2.3 million people are incarcerated in the United States, and people of color are disproportionately represented.1 Incarcerated people face significant health disparities, including higher rates of chronic diseases, infectious diseases, addiction, and mental illness compared with the general population.2,3 Until 2018, Louisiana led the world in incarceration rates, and it remains the least healthy state in the nation. In 2011, the US Supreme Court acknowledged that a New Orleans prosecutors suppression of evidence led to a death sentence for John Thompson but ruled that the state was not liable.6 After Glenn Fords 2014 release from 30 years on death row, another district attorney refused to acknowledge Fords false imprisonment and insisted, I think we need to kill more people through use of the death penalty.7 Like much of the nation, Louisiana struggles with lack of appropriate funding for indigent defense and a bail system and supervision fees that target the poor. Primary Prevention First, recognize the policies that lead to mass incarceration as drivers of health inequity, and focus on preventing incarceration by supporting diversion, community policing, harm reduction programs, substance use treatment, and community-based mental health services. Improving Conditions of Confinement Although primary prevention of incarceration must be prioritized, the public health community should also support improvements in conditions of confinement, including appropriate medical triage on entry into jails and prisons, improved access to substance use treatment, reduction in the use of solitary confinement (particularly for punitive purposes), access to healthy food, and sufficient outdoor exercise.

CONFLICTS OF INTEREST. (2020). American Journal of Public Health, Suppl.Supplement 1, 110 doi:https://doi.org/10.2105/AJPH.2020.110.S1.S6

Ahalt, C., Haney, C., Williams, B., & Ekhugen, K. (2020). Role of a US–Norway exchange in placing health and well-being at the center of US prison reform. American Journal of Public Health, Suppl.Supplement 1, 110, S27-S29. doi:https://doi.org/10.2105/AJPH.2019.305444

Living and working conditions in many US correctional facilities are damaging to the health of incarcerated people and correctional staff.1,2 In response, experts have called for efforts to improve the health of incarcerated people, and correctional systems have invested in officer wellness programs.1,3 Some correctional systems outside the United States have taken a different approach to these challenges: developing a correctional culture (defined here as the values, beliefs, and norms of a correctional institution or system) that deliberately puts health, humanity, and rehabilitation at the forefront of correctional practice.4 We describe the feasibility and early results of Amend, our program adapting practices from one such system, the Norwegian Correctional Service, for implementation in four facilities in one US state correctional system housing residents of all security levels, backgrounds, and needs.

Connors, K., B.A., Flores-Torres, M., Stern, D., PhD., Valdimarsdóttir, U., PhD, Rider, J. R.,ScD.M.P.H., Lopezridaura, R., ScD., . . . Lajous, M., ScD. (2020). Family member incarceration, psychological stress, and subclinical cardiovascular disease in mexican women (2012–2016). American Journal of Public Health, Suppl.Supplement 1, 110, S71-S77. doi:https://doi.org/10.2105/AJPH.2019.305397

Objectives: To examine the association between family member incarceration, psychological stress, and subclinical cardiovascular disease (CVD). Methods. Between 2012 and 2016, 1849 CVD-free women from the Mexican Teachers' Cohort responded to questions on family incarceration from the Life Stressor Checklist. Perceived stress and hair cortisol levels were measured in a subset of participants. Carotid intima-media thickness was measured, and carotid atherosclerosis was determined in all participants. We used multivariable quantile, linear, and logistic regression models to evaluate the association between family member incarceration, stress, and subclinical CVD. Results. Among women with a mean age of 49.7 years (SD ±5.2), 15.3% reported family member incarceration. We found that both perceived stress and hair cortisol levels were significantly higher in women with an incarcerated family member relative to women without one. After multivariable adjustment, women who reported family member incarceration had 41% (95% confidence interval = 1.04, 2.00) higher odds of carotid atherosclerosis compared with those who did not. Conclusions. Family member incarceration was associated with robust markers of stress and cardiovascular risk. Mass incarceration may have a long-lasting impact on physical health of affected families. (Am JPublic Health. 2020;110:S71 -S77. doi:10.2105/ AJPH.2019.305397) Mass incarceration is increasingly recognized as an emerging public health concern that

Heller, D., & Galea, S. (2020). The role of academic public health in reducing incarceration. American Journal of Public Health, Suppl.Supplement 1, 110, S16-S17. doi:https://doi.org/10.2105/AJPH.2019.305265

By way of illustration, among children born in 1990, 1 in 25 Whites and 1 in 4 Blacks had a parent imprisoned by age 14 years,6 an increase in magnitude and racial disparity compared with those born in 1978. ...]incarceration is a prevalent challenge to the health of the US population and contributes in innumerable ways to health gaps. ...]academic public health is entrusted with training the next generation of scholars and developing the public health workforce. ...]academic public health aspires-or should aspire-to translate their knowledge and make their scholarship accessible to those who are producing change.

Fehrenbacher, A. E., Park, J. N., Footer, K. H. A., Silberzahn, B. E., Allen, S. T., & Shermam, S. G. (2020). Exposure to police and client violence among incarcerated female sex workers in baltimore city, maryland. American Journal of Public Health, Suppl.Supplement 1, 110, S152-S159. doi:https://doi.org/10.2105/AJPH.2019.305451

Objectives. To determine the rate and correlates of incarceration among street-based female sex workers (FSWs). Methods. From April 2016 to January 2017, FSWs (n = 250) in Baltimore City, Maryland, were enrolled in a 12-month prospective cohort study. We analyzed baseline data and used zero-inflated negative binomial regression to model the incarceration rate. Results. Overall, 70% of FSWs had ever been incarcerated (mean = 15 times). In the multivariable analysis, incarceration rate was higher for FSWs exposed to police violence, non-Hispanic White FSWs, and women who used injection drugs daily. Risk for ever being incarcerated was higher for FSWs exposed to police or client violence, non-Hispanic Black FSWs, women who used injection or noninjection drugs daily, and those with longer time in sex work. Conclusions. Incarceration was associated with exposure to violence from both police and clients. Daily drug use and time in sex work appeared to amplify these risks. Although non-Hispanic Black

women were at greater risk for ever being incarcerated, non-Hispanic White women were incarcerated more frequently. Public Health Implications. Decriminalization of sex work and drug use should be prioritized to reduce violence against FSWs. (Am J Public Health. 2020;110:S152-S159. doi:10.2105/AJPH.2019.305451)

Hobor, G.,PhD.M.A., & Plough, A.,PhD.M.P.H. (2020). Addressing mass incarceration to achieve health equity. American Journal of Public Health, Suppl.Supplement 1, 110 doi:https://doi.org/10.2105/AJPH.2019.305433

In 2018, the Robert Wood Johnson Foundation added a measure of incarceration to the 35 national-level measures we are using to track the nation's progress toward the vision of a culture of health. We made this change for two reasons.First, there is a well-established and growing body of research on the intersection of health and incarceration. In addition, advocates of justice reform have recently argued for making jails and prisons more transparent, questioning the quality of health care within those facilities and the access incarcerated people have to needed services. Around the same time that we decided to include incarceration in our culture of health measures, we were approached by the guest editors of this supplement of AJPH. We saw this supplement as an exciting opportunity to show how efforts to influence the US system of mass incarceration illuminate the four action areas of a culture of health: making health a shared value; fostering crosssector collaboration; creating healthier, more equitable communities; and strengthening the integration of health services and systems. The supplement also highlights promotion of wellbeing as a national priority and the critical importance of a health equity focus in our work.

Bassett, M. T. (2020). Public health addresses police violence: A beginning. American Journal of Public Health, Suppl.Supplement 1, 110, S7-S8. doi:https://doi.org/10.2105/AJPH.2019.305435

From Enforcers to Guardians: A Public Health Primer on Ending Police Violence By Hannah L. F. Cooper, ScD, and Mindy Thompson Fullilove, MD Baltimore, MD: Johns Hopkins University Press; 2020 280 pages; $34.95 ISBN: 9781421436449

Fullilove, R. E., Maxis, H., Cortes, A., & Gamarra, R. (2020). The bard prison initiative: Education, incarceration, and public health. American Journal of Public Health, Suppl.Supplement 1, 110, S33-S34. doi:https://doi.org/10.2105/AJPH.2019.305457

A vast body of research has demonstrated that mass incarceration has and continues to be a significant driver of health inequalities in the United States. The dramatic overrepresentation of African American men in jails and prisons is a stark reminder of the persistent inequities in education, housing, employment, and access to health care of the communities from which they were taken.1 The deprivation of educational opportunities is perhaps the most significant of the risks of incarceration, with approximately 68% of the incarcerated persons in state prisons in the United States without a high school diploma.2 Barriers to high school completion include the so-called school-to-prison pipeline, which is defined as the collection of local and national policies and practices that increase the odds that students will be involved in the criminal justice system as juveniles and later in life as adults.3 The overrepresentation of students of color in this pipeline suggests that one of the most important determinants of mass incarceration -education-is also the key to the development of significant solutions. The relationship between educational opportunity and systems of incarceration is powerful. As noted in 2016 in a brief from the US Department of Education, since the 1990s, government expenditures for prisons and jails at the state level have increased three times as fast as spending on education at the elementary and secondary level. Moreover, it is reported that young black men between the ages of 20 and 24 who do not have a high school diploma (or an equivalent credential) have a greater chance of being incarcerated than of being employed. Efforts to increase high school completion rates alone have the potential to substantially reduce arrest rates in affected communities.

Kajeepeta, S., M.S., Rutherford, C. G., B.A., Keyes, K. M., PhD., El-Sayed, A., & Prins, S. J., PhD. (2020). County jail incarceration rates and county mortality rates in the united states, 1987–2016. American Journal of Public Health, Suppl.Supplement 1, 110, S109-S115. doi:https://doi.org/10.2105/AJPH.2019.305413

Objectives. To evaluate the relationship between changes in county jail incarceration rates and subsequent county mortality rates across the United States. Methods. We analyzed county jail incarceration rates from the Bureau of Justice Statistics from 1987 to 2016 for 1884 counties and mortality rates from the National Vital Statistics System. We fit 1-year-lagged quasi-Poisson 2-way fixed-effects models, controlling for unmeasured stable county characteristics, and measured time-varying confounders, including county poverty and crime rates. Results. A within-county increase in jail incarceration rates from the first to second quartile was associated with a 2.5% increase in mortality rates, adjusting for confounders (risk ratio RR] = 1.03; 95% confidence interval CI] = 1.02,1.03).This association followed a dose-response relationship and was stronger for mortality among those aged 15 to 34 years (RR = 1.07; 95% CI = 1.06, 1.09). Conclusions. Within-county increases in jail incarceration rates are associated with increases in subsequent mortality rates after adjusting for important confounders. Public Health Implications. Our findings add to the growing body of empirical evidence of the harms of mass incarceration. The criminal justice reform and decarceration movements can use these findings as they develop strategies to end mass incarceration. (Am J Public Health. 2020;110:S109-S115. doi:10.2105/AJPH.2019.305413)

Rosen, D. L., Buchbinder, M., Juengst, E., & Rennie, S. (2020). Public health research, practice, and ethics for justice-involved persons in the big data era. American Journal of Public Health, Suppl.Supplement 1, 110, S37-S38. Retrieved from https://www.proquest.com/scholarly-journals/public-health-research-practice-ethics-justice/docview/2530044180/se-2?accountid=211160

In the big data era, a host of new data are being generated as people-often unwittingly- enlarge their digital footprint via Internet activity, purchases with credit cards or consumer loyalty cards, smartphones and wearable technologies, and electronic health records and genetic sequencing; more data are also generated as government entities become increasingly efficient and expansive in collecting information. With varying success, attempts at harnessing these data include using cellphone location data to understand disease transmission, measuring the impact of public health interventions by analyzing Twitter, and predicting disease outbreaks based on search engine results.

Duarte, C. d., Alson, J. G., Garakani, O. B., & Mitchell, C. M. (2020). Applications of the american public health association's statement on addressing law enforcement violence as a public health issue. American Journal of Public Health, Suppl.Supplement 1, 110, S30-S32. doi:https://doi.org/10.2105/AJPH.2019.305447