Title: Incarceration as a Key Variable in Racial Disparities of Asthma Prevalence

Version: 1 Date: 7 December 2009

Reviewer: Deborah Pearlman

Reviewer's report:

BMC Public Health
Research article: Incarceration as a Key Variable in Racial Disparities of Asthma Prevalence

General comment

There is broad consensus that the U.S. prison population exhibits poorer overall health status and has higher rates of health care utilization than the general U.S. population. Much of the research in this area has focused on the higher prevalence of infectious diseases, mental illness, and substance abuse in prison populations as compared with the general U.S. population. Other studies have extended these analyses to examine the prevalence of major chronic conditions (asthma, diabetes, and hypertension) within the prison population, and have found that the prevalence of asthma among prison and jail inmates was higher than in the U.S. population. The current manuscript is one of the first studies to investigate whether a history of incarceration mediates racial disparities in chronic health conditions. The paper is well-written and builds on previous research examining the prevalence of chronic diseases among persons with a history of incarceration. The study design, which is based on data from the 2004 NYC Health and Examination Survey, is excellent. The NYC HANES is modeled after the National Health and Examination Survey. The statistical approaches used to analyze the data are appropriate. The paper’s title and abstract accurately describe the paper and the research questions posed by the authors are well defined.

Issues to address
(Major Compulsory Revisions)

1. The first research question states that the study examines “the impact of having a history of incarceration on the prevalence of asthma, diabetes, and hypertension using both standard regression and propensity score matching techniques...” Yet, the paper’s primary focus, significant findings, and discussion of results all focus on the significantly higher asthma prevalence among persons ever incarcerated than in the population that has never been incarcerated. The authors are strongly encouraged to reframe the first research question and focus on asthma. This change would tighten the manuscript. The text summarizing Table 2 could include one sentence that notes that the propensity score analysis was applied to diabetes and hypertension, but the prevalence of these two
conditions was not higher among formerly incarcerated individuals than among those who had never been incarcerated.

2. The introduction could be better organized to focus on the following points. First, many people incarcerated in U.S. prisons come from poverty neighborhoods where they have had limited access to health care. Second, asthma is more prevalent in poor than in non-poor neighborhoods. Third, racial residential segregation disproportionately places African Americans in more impoverished neighborhoods than other racial/ethnic minority groups. Fourth, the jump in incarceration rates since the 1970s has disproportionately affected African Americans, especially low-income black men. One would expect that both inside and out of prison, African Americans would have a high prevalence of asthma.

3. Since the study presented has been completed, the authors should consider framing their research questions in the past tense rather than future tense.

4. The description of the Sample and Setting (Methods section) should include a sentence that of the 1990 respondents, 92% had no history of incarceration and 8% were formerly incarcerated.

5. If the paper focuses on asthma prevalence than the description of the variables only needs to list the questions used to measure the asthma outcome. The independent variables can be succinctly described.

6. The description of the propensity score is well-done (Methods section). A citation is needed for the sentence that justifies why propensity scores produce better adjustments of baseline difference than a regression model controlling for confounders (two reasons are given).


8. If the paper focuses on asthma prevalence than the description of the logistic regression analysis should be modified (Methods section).

9. Table 1 is nicely laid out. Given a sample of 160 respondents in the formerly incarcerated group, the authors should collapse some of the multiple categories used for race/ethnicity and age. The 95% confidence intervals for variables such as Asian, other race, age 60+, cocaine user, shown in Table 3, are wide and unstable (Results).

10. The findings of a higher prevalence of current asthma among formerly incarcerated respondents vs. never incarcerated respondents are not shown in Table 2 (Model 1: 12.7% vs. 6.2%; Model 5: 13% vs. 6%).
11. The first sentence of the paragraph that describes the results of the multivariable logistic regression states that “we used statistical mediation analysis...” This is redundant. The Methods section described the logistic regression as a mediation model to test if ever being incarcerated mediated the relationship between race/ethnicity and asthma. It would be helpful in explaining the results shown in Table 3 to explain why Model 2 showed evidence for mediation. The authors should test for the significance of the mediated effect.

12. The text for Table 3 could include one sentence that states the relationship of race/ethnicity on prior history of incarceration. Please add (data not shown).

13. It would have been helpful if Table 3 or accompanying text showed the adjusted odds ratio and 95% CI for history of incarceration included in Models 2 and 3.

14. The discussion section poses several explanations for the findings, including higher rates of smoking, substance abuse, domestic violence, and low SES. Only one citation is given and that article is based on a study conducted in India, which is not relevant to the current study. Additional citations are needed.

15. Other possible explanations draw on the work of Wright et al. (citation #30). The multilevel framework for asthma epidemiology is based on individual- and neighborhood-level variables. The article does not mention correctional facilities. Additional citations are needed.

16. Wright et al. have suggested an association between stress and asthma prevalence (citation 31). The article does not mention correctional facilities. Additional citations are needed.

17. The possibility that the higher prevalence of asthma found in the ever incarcerated population may be attributed to school absenteeism and lower school performance because this group likely had asthma as children goes beyond the data and should be deleted.

18. The Discussion section raises an interesting point that epidemiologic studies of asthma should include an incarcerated population or a measure for incarceration status. How realistic is this suggestion? The Behavioral Risk Factor Surveillance System (BRFSS) is the primary database that states use to measure the health of their population. Is the suggestion that states add an optional incarceration module to the BRFSS? The cost of adding modules to the BRFSS or implementing surveys like NYC HANES or the California Health Interview Survey is prohibitive for most cities and states and is unlikely to happen in the current economic climate.

19. Please consider other emerging challenges that warrant discussion, such as the impact of the current recession on reducing the safety net of health and social services in low income and high poverty communities. How are we going to meet the challenge of caring for the poor with chronic illnesses, including those with a history of incarceration?
20. Suggested citations for authors


Very interesting paper.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

'I declare that I have no competing interests'