

PERSPECTIVE

The Tuskegee Study of Untreated Syphilis: A Case Study in Peripheral Trauma with Implications for Health Professionals

Marcella Alsan, MD, MPH, PhD^{1,2}, Marianne Wanamaker, PhD^{2,3}, and Rachel R. Hardeman, MPH, PhD⁴

¹John F. Kennedy School of Government, Harvard University, Cambridge, MA, USA; ²National Bureau of Economic Research, Cambridge, MA, USA; ³Department of Economics, University of Tennessee, Knoxville, TN, USA; ⁴Division of Health Policy & Management, University of Minnesota School of Public Health, Minneapolis, MN, USA.



Racially or ethnically targeted events may have adverse health implications for members of the group not directly targeted, a phenomenon known as peripheral trauma. Recent evidence suggests that mass incarceration, police brutality, and immigration actions all have such effects, as did medical exploitation by the US government during the Tuskegee Study of Untreated Syphilis in the Negro Male. We summarize recent findings in the economics literature on population-level effects of the Tuskegee study, including a decline in health-seeking behavior and a rise of both mortality and medical mistrust among African-American men not enrolled in the study. We highlight the relevance of our findings for present-day racial health disparities. Practitioner awareness of peripheral trauma is an important element of cultural competency. But among options to substantially improve minority trust in the healthcare system, the diversification of medical practitioners may hold greatest promise.

KEY WORDS: racial disparities; mistrust in institutions; population health.

J Gen Intern Med 35(1):322–5

DOI: 10.1007/s11606-019-05309-8

© Society of General Internal Medicine 2019

INTRODUCTION

A nascent body of research suggests exposure to racially or ethnically targeted events predicts adverse physical and mental health outcomes among minority groups, even among members not directly targeted, a phenomenon known as peripheral trauma. In cases where the medical profession is the perpetrator of such actions, health effects may be even more pronounced as targeted groups experience both the stress of targeting and heightened mistrust of the medical profession.

In this Perspectives piece, we summarize recent research on peripheral trauma, including the population-level effects of police killings of unarmed black men, immigration enforcement actions, and mass incarceration.^{1–4} We then discuss new evidence that the racially targeted Tuskegee Study of Untreated

Syphilis in the Negro Male (TSUS) affected more than just the study's direct victims; lower healthcare utilization and higher mortality extended to the generation of black men who identified with those victims. To the extent ongoing medical mistrust among black Americans is rooted in this historical exploitation, the peripheral trauma of TSUS spans generations.

We conclude by outlining the implications of peripheral trauma for the medical profession and discuss potential mitigating strategies to counter its effects.

EVIDENCE ON PERIPHERAL TRAUMA

Several recent studies document the effect of peripheral trauma on population health. Bor and colleagues (2018) examine whether police killings affect the mental health of black Americans in the surrounding community.¹ Combining data on police killings of unarmed black Americans with mental health outcomes for others in the same state, the authors found an estimated 0.14 (95% CI 0.07 to 0.22) additional poor health days among black Americans in the three months following a police killing, with no similar effects on mental health for white Americans.

Turning to Hispanic Americans, Novac et al. (2016) investigate the spillover effects of an immigration raid in Postville, Iowa, on ethnic-specific birth outcomes.² The raid led to a 24% increase in low birth weight infants (RR 1.24, 95% CI 0.98 to 1.57) among native and immigrant Latina mothers but no remarkable increase among infants of non-Latina white mothers. Building off this finding, Alsan and Yang (2019) investigate whether Secure Communities, an immigration enforcement program rolled out between 2008 and 2014 and recently reactivated, affected health via the take-up of federal safety net programs by Hispanic-headed households.³ The authors hypothesized that, since enrollment in many federal programs requires a detailed description of household members, Hispanic citizens eligible for such programs but with connections to unauthorized immigrants would be less likely to apply for them. Using a difference-in-differences model, they find a 2.5 percentage point reduction in food stamp take-up (95% CI –4.01 to –1.09) and a 1.3 percentage point reduction in Supplemental Security Income (95% CI –2.26 to –0.30). Such declines are relevant for medical

Received October 5, 2018

Revised May 30, 2019

Accepted August 13, 2019

Published online October 23, 2019

professionals as both programs have been shown to improve health among enrollees.^{5, 6}

Finally, Hatzenbuehler et al. (2015) describe the spillover effects of mass incarceration on mental health.⁴ The researchers trace mental health outcomes of people who live in areas from which the incarcerated are heavily drawn, but who have not otherwise had contact with the criminal-justice system. They found that even after controlling for a battery of individual- and neighborhood-level factors, individuals living in high-exposure areas were significantly more likely to have met the criteria for both major depressive disorder (OR 2.5, 95% CI 1.4 to 4.6) and general anxiety disorder (OR 2.3, 95% CI 1.2 to 4.5) in their lifetimes than were their counterparts in low-exposure areas.

A CASE STUDY IN PERIPHERAL TRAUMA: THE TUSKEGEE STUDY

The peripheral trauma of these targeted actions in recent US social history mirrors the population-level effects of medical injustice nearly five decades prior. TSUS began as an attempt to understand the pathology and course of sexually transmitted infections (STIs), which had taken their toll on the USA's capacity to fight in World War I. On July 9, 1918, Congress passed the Chamberlain-Kahn Act (Public 193), appropriating funds to states to combat the infection and requiring that states set up clinics, educate the public on STIs, control prostitution, and quarantine "immoral women."^{7, 8} In addition, the country's Public Health Service (PHS) worked alongside state boards of health to organize clinics and educational activities across the country.

Through its partnership with the Julius Rosenwald Fund, PHS surveyed several areas of the South for syphilis and found alarming rates in Macon County (approximately 35%), though these rates have subsequently been called into question.⁹ The agency initially planned to provide treatment for affected individuals. But when the stock market crash of 1929 led to a cut in funding, PHS pivoted from an interventional program designed to treat afflicted individuals to an observational study of *untreated* syphilis.¹⁰ The study began in 1932 with approximately 600 poor and mostly illiterate black men, two-thirds of whom had syphilis. It lasted for four decades, during which time standard treatment for syphilis evolved from relatively ineffective arsenic-containing compounds to mostly effective penicillin. In July 1972, reporting by Jean Heller of the Associated Press finally brought the study to a halt. Heller's reporting was widely disseminated in national media, and detailed, follow-on reporting appeared in local newspapers, national magazines, and television and radio news. Congressional hearings further amplified news of the injustice.

It is not known how many of the infected men died of syphilis-related causes, as opposed to competing causes; dozens of spouses and children had been infected with the disease as well. A \$9 million settlement was reached in 1974

for the study's victims, and the US government belatedly issued an official apology in 1997.

While the study's harmful effects on the participants and their families often serve as a cautionary tale for human subject researchers, less is known about the peripheral trauma of this event. Alsan and Wanamaker's 2018 study, published in *The Quarterly Journal of Economics*, suggests significant population-level effects of TSUS among older black men.¹¹ Figure 1, which provides motivation for their analytical strategy, plots the difference in black and white age-specific all-cause mortality rates (per 1000) for females (red dotted line) and males (blue solid line) from 1968 to 1988. Panels a and b show that for both infants and children ages one to five, the racial gap in mortality was closing steadily over time. At older ages, represented in the bottom row, black men were converging towards white men's mortality rates before 1972 (the black vertical line represents the timing of the TSUS disclosure). However, soon after the disclosure, the mortality of black men nationwide began to diverge from white men—a pattern not evident among women.

That mortality for black men changed course in 1972 does not alone implicate the Tuskegee revelation, since other events could have occurred in that year. However, men for whom the information was highly salient, perhaps due to empathy for the victims or fear that the same mistreatment could occur to them, might be more inclined to avoid healthcare. Alsan and Wanamaker test this hypothesis using geographic proximity to Tuskegee, Alabama, as an additional metric of the salience of the Tuskegee abuses, in addition to race, gender, and year of observation. The effect of the disclosure is captured by the post-1972 change in the racial gap in health-related behaviors, beliefs, and mortality among older men as a function of geographic proximity to Tuskegee, Alabama, controlling for any changes in the racial gap for older women. In this way, the scope for misattributing a post-1972 correlation to the Tuskegee disclosure is substantially reduced; any confounding factors affecting mortality and health-seeking behaviors must have disproportionately affected black men, and not black women or white men, and must have done so in a detectable geographic pattern centered around Tuskegee, Alabama. Although black women may have been affected by the news of Tuskegee, several factors suggest a more muted response among women, including black women's prior history with the medical profession through childbirth, the tendency of women to form trust based on relationships and past experience, and, perhaps obviously, that TSUS victims were male.

Regression analysis reveals that TSUS induced significant peripheral trauma. The age-adjusted all-cause mortality of black men, measured from 1968 through 1987, increased by approximately 7% (95% CI 2.6 to 11.6%) after 1972, with larger impacts in places closer to Tuskegee. National Health Interview Survey (NHIS) data indicate that changes in outpatient care utilization drove part of these mortality changes; black men reduced their interactions with outpatient physicians between 1973 and 1977 by approximately 22% (95% CI 10.5 to 33.4%) relative to 1969–1972, again with larger effects closer to

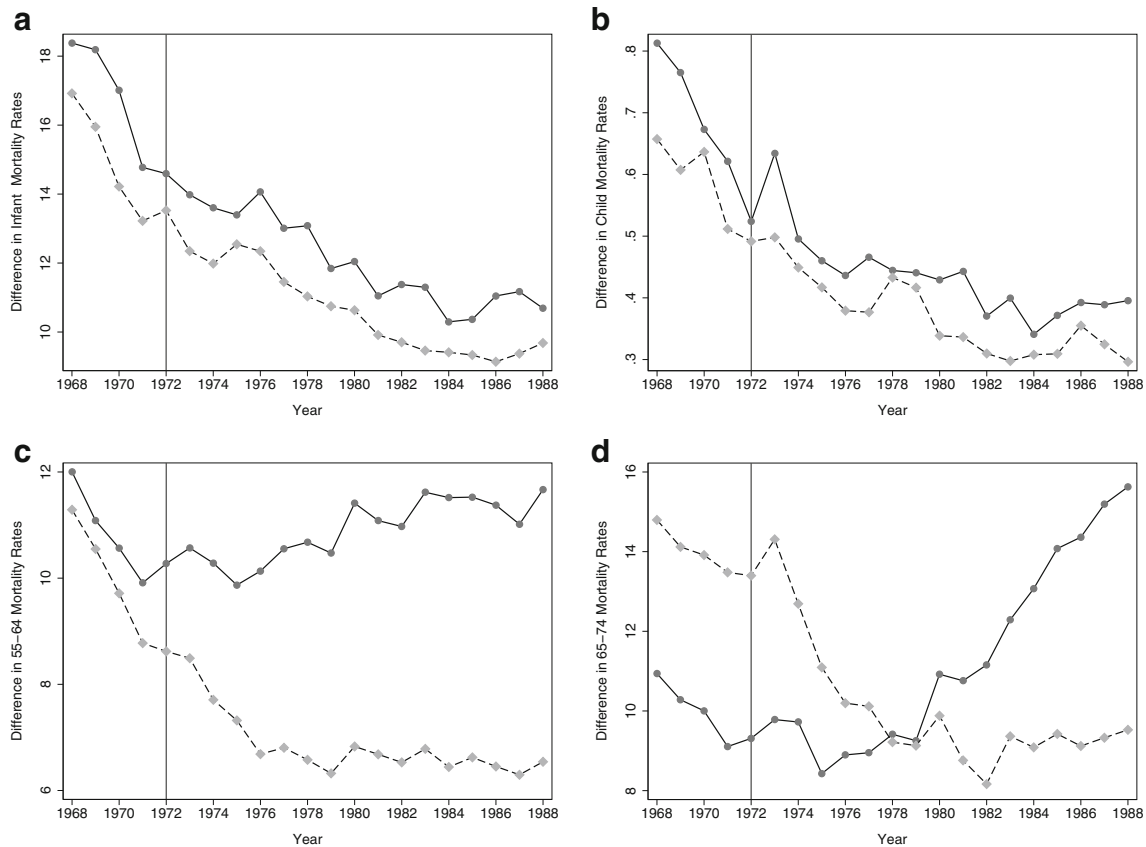


Figure 1 Racial gaps in age-specific mortality rates by gender and age. Authors' calculations. Data are from the CDC Compressed Mortality Files (1968–1988). Panel A: Infants aged 0; Panel B: Children aged 1 to 5; Panel C: Adults aged 55 to 64; Panel D: Adults aged 65 to 74. The solid (blue) line represents the difference for males; the red (dotted) line represents the difference for females. Figure reproduced from Alsan and Wanamaker, “Tuskegee and the Health of Black Men” in *The Quarterly Journal of Economics* (2018) 133(1):407–455, by permission of Oxford University Press.

Tuskegee. The utilization effects are driven by Southern men with below-median income and below-median education levels, suggesting that information itself, which is positively correlated with both income and education, was not the mechanism.

DISCUSSION

Heightened national concern about systemic racism in institutions coupled with persistent gaps in health outcomes has raised awareness on the role of health professionals in affecting change.^{12, 13} To date, efforts among clinicians have typically centered on cultural competency training, an information set that aims to help practitioners effectively communicate across cultures. But these programs often give physicians a superficial overview of group differences which may reinforce stereotypes and practitioner biases.¹⁴ Indeed, randomized trials of cultural competency curricula for health professionals generally show improved knowledge measures, but effects on patient outcomes have either been null or only slightly positive, prompting calls for improved methodological rigor in both implementation and evaluation.^{15–18} Meta-analysis by Ludolph and Schulz (2018) suggests that a more targeted set of debiasing interventions, including

cognitive or technological strategies to reduce implicit bias in practitioner decision-making, may be more effective at achieving the goals of cultural competency training.¹⁹

If cultural competency training has failed, perhaps it is because of a hyper focus on cultural “otherness” rather than a more reflective process of both examining one’s own beliefs and cultural identities as well as deeper and sustained learning about another’s history, culture, and lived experience.^{20, 21} Hardeman et al. (2016) discuss how anti-racism curricula which include the social construction of race and the history of racism in the USA and in the healthcare system specifically may be more effective at developing a clinicians’ knowledge base and ability to address structural racism in the healthcare setting.¹² As an example, rather than viewing medical mistrust as a fixed cultural marker, with more information practitioners can appreciate mistrust as the peripheral trauma from a specific historical injustice and the racism that begat that injustice.

Another frequently discussed policy prescription to address health inequities endorsed by the Institute of Medicine (IOM), the National Medical Association (NMA), the Association of American Colleges (AAC), and the American Medical Association (AMA) is to increase minority representation in the healthcare profession.^{22, 23} These calls have come despite mixed evidence of

effectiveness; although a handful of studies indicated an increase in compliance with medical advice among concordant patient-physician pairs, a 2009 meta-analysis of 27 public health studies examining whether patient-physician concordance affects health found inconclusive results and called for more rigorous research (Meghani et al.).^{24–26} A recent experiment in Oakland by Alsan, Garrick, and Graziani (2018) answered the call for rigor with a double-blind randomized controlled trial, which randomly assigned African-American men to doctors of different racial backgrounds. Black male subjects randomly assigned to black male doctors were 18 percentage points more likely to elect preventive services relative to those assigned to non-black doctors, and particularly so for invasive preventive health services requiring an injection or a blood draw.²⁷ The findings were strongest among men who reported higher baseline levels of medical mistrust or who had limited experience with the healthcare system.

CONCLUSION

Minority patients are susceptible to peripheral trauma from racially or ethnically targeted events in the broader society, and the Tuskegee Study of Untreated Syphilis is a case study that offers a window into the negative effects of such targeted exploitation on health. Educating the medical profession on the history of peripheral trauma is an important first step to addressing persistent health disparities, but concrete efforts to debias current practitioners and to increase the participation of minority practitioners in the healthcare field will be needed to further close the existing gaps.

Corresponding Author: Marianne Wanamaker, PhD; Department of Economics, University of Tennessee, Knoxville, TN, USA (e-mail: wanamaker@utk.edu).

Authors' Contributions Marcella Alsan, Marianne Wanamaker, and Rachel Hardeman take responsibility for the integrity of the data and the accuracy of the data analysis, as well as the manuscript submission.

Funding Information Drs. Alsan and Wanamaker recognize funding from the National Institute on Minority Health and Health Disparities (1R03MD011449).

Compliance with Ethical Standards:

Conflict of Interest: The authors declare that they do not have a conflict of interest.

REFERENCES

1. Bor J, Venkataramani AS, Williams DR, Tsai AC. Police killings and their spillover effects on the mental health of black Americans: a population-based, quasi-experimental study. *Lancet*. 2018;392:302–10.
2. Novac NL, Geronimus AT, Martinez-Cardoso AM. Change in birth outcomes among infants born to Latina mothers after a major immigration raid. *Int J Epidemiol*. 2017;46(3):839–49.
3. Alsan M, Yang CS. Fear and the Safety Net: Evidence from Secure Communities. NBER Working Paper No. 24731. 2018.

4. Hatzenbuehler ML, Keyes K, Hamilton A, Uddin M, Galea S. The Collateral Damage of Mass Incarceration: Risk of Psychiatric Morbidity Among Nonincarcerated Residents of High-Incarceration Neighborhoods. *Research and Practice*. 2015;105(1):138–43.
5. Hoynes H, Schanzenbach DW, Almond D. Long-Run Impacts of Childhood Access to the Safety Net. *Am Econ Rev*. 2016;106(4):903–34.
6. Herd P, Schoeni RF, House JS. Upstream Solutions: Does the Supplemental Security Income Program Reduce Disability in the Elderly? *Milbank Q*. 2008;86(1):5–45.
7. Smolak A. White slavery, whorehouse riots, venereal disease and saving women: historical context of prostitution interventions and harm reduction in New York City during the Progressive Era. *Soc Work Public Heal*. 2014;28(5):496–508.
8. Pierce CC. Venereal disease control in civilian communities. *Am J Public Health*. 1919;9(5):340–5.
9. Roy B. The Julius Rosenwald Fund syphilis seroprevalence studies. *J Natl Med Assoc*. 1996;88(5):315–22.
10. Centers for Disease Control and Prevention [Internet]. Atlanta: CDC. U.S. Public Health Service syphilis study at Tuskegee timeline; 2017 [cited 2018 October 4]. Available from: <https://www.cdc.gov/tuskegee/timeline.htm>.
11. Alsan M, Wanamaker M. Tuskegee and the Health of Black Men. *Qtrly J of Econ*. 2018;133(1):407–55.
12. Hardeman RR, Medina EM, and Kozhimannil KB. Structural racism and supporting black lives—the role of health professionals. *N Engl J Med*. 2016;375(22): 2113–5.
13. Tsai J, Crawford-Roberts A. A call for critical race theory in medical education. *Acad Med*. 2017;92(8):1072–3.
14. Tsai J. A Critique of Cultural Competency in Health Care [Internet]. in-Training: the agora of the medical student community. 2016 [cited 2019 Apr 10]. Available from: <https://in-training.org/critique-cultural-competency-10456>.
15. Carpenter R, Estrada CA, Medrano M, Smith A, Massie FS. A web-based cultural competency training for medical students: a randomized trial. *Am J Med Sci*. 2015;349(5):442–6.
16. Lie DA, Lee-Rey E, Bereknyei S, Braddock CH 3rd. Does cultural competency training of health professionals improve patient outcomes? A systematic review and proposed algorithm for future research. *J Gen Intern Med*. 2011;26(3):317–25.
17. Horvat L, Horey D, Romios P, Kis-Rigo J. Cultural competence education for health professionals. *Cochrane Database Syst Rev*. 2014;(5):CD009405.
18. Truong M, Paradies Y, Priest N. Interventions to improve cultural competency in healthcare: a systematic review of reviews. *BMC Health Serv Res*. 2014;14:99.
19. Ludolph R, Schulz RJ. Debiasing Health-Related Judgments and Decision Making: A Systematic Review. *Med Decis Making*. 2018;38(1):3–13.
20. Tervalon M, Murray-Garcia J. Cultural humility versus cultural competence: a critical distinction in defining physician training outcomes in multicultural education. *J Health Care Poor Underserved*. 1998;9(2):117–25.
21. Kumagai AK, Lypson ML. Beyond cultural competence: critical consciousness, social justice, and multicultural education. *Acad Med*. 2009;84(6):782–7.
22. Spevick J. The case for racial concordance between patients and physicians. *Virtual Mentor* 2003;5(6):163–165.
23. Institute of Medicine. Unequal treatment: confronting racial and ethnic disparities in health care. (Smedley BD, Stith AY, Nelson AR, eds.). National Academies Press, Washington D.C.; 2002.
24. LaVeist TA, Amani N-J, Jones KE. The association of doctor-patient race concordance with health services. *J Public Health Policy*. 2003;24(3–4):312–23.
25. Saha S, Komaromy M, Koepsell T, Bindman A. Patient-physician racial concordance and the perceived quality and use of health care. *Arch Intern Med*. 1999;159(9):997–1004.
26. Meghani SH, Brooks JM, Gipson-Jones T, Waite R, Whitfield-Harris L, Detrick JA. Patient-provider race-concordance: does it matter in improving minority patients health outcomes? *Ethn Health*. 2009;14(1):107–130.
27. Alsan M, Garrick O, Graziani GC. Does Diversity Matter for Health? Experimental Evidence from Oakland. NBER Working Paper No. 24787. 2018.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.