

Impact of Implicit Bias on Healthcare Outcomes for Women of Color in The United States

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What Beyoncé and Williams Have in Common

Serena Williams, Beyoncé Giselle Knowles-Carter; two Black women at the top of their respective fields – Beyoncé has won 22 Grammy Awards, while Williams has 23 Grand Slam Single titles. There are many similarities between the lives of these two women, but perhaps the most startling is a shared life experience, both survived potentially fatal pregnancy complications. With respect to their pregnancies, these two superstars are just like millions of other Black women in the United States. Black women are three to four times more likely to die from pregnancy-related causes than white women (*Pregnancy Mortality Surveillance System | Maternal and Infant Health | CDC, 2020*). It is part of the reason why the overall rate of pregnancy related deaths has climbed over the past two decades, making the maternal mortality rate in the United States the worst in any industrialized country (Kassebaum et al., 2016). This research paper aims to understand the impact of implicit bias on how women of color are treated in United States healthcare systems. Additionally, this topic is contextualized in the field of Science and Technology Studies, STS, by using the theory of co-production to examine the downfalls of the current system and suggest areas of improvement.

Research Question and Methods

The question that this research answers is “What is the effect of implicit bias on how women of color are treated in United States healthcare systems?” This research utilizes the STS framework of co-production by Sheila Jasanoff (Jasanoff, 2004) to identify how implicit bias hinders the co-productive partnership between patients and physicians. Furthermore, effective coproduction between these two parties is emphasized as a way to combat the negative effects of implicit bias. This research collects two types of evidence: research studies about the correlation

of patient outcome and experiences, with factors such as race and implicit bias in addition to primary literature about the role of coproduction in healthcare. The main collection method used is online articles found by searching keywords such as: implicit bias, healthcare outcome, physician communication, women of color, Black women, gender and race, as well as coproduction in healthcare and coproduction principles.

This research is organized in five main sections. First the impact of implicit bias on physician communication and assessment is established, then national survey research about the healthcare experiences of women of color is presented, followed by research that compares the treatment women of color receive compared to their white male counterparts. These findings are then contextualized in the STS framework of coproduction by presenting primary literature regarding the role of coproduction in healthcare and the impact of implicit bias on coproduction. Lastly, an example of how coproduction was implemented in the clinical setting in the United Kingdom is examined.

Treatment of Women of Color in the United States Healthcare Systems

In September 2017, Serena Williams gave birth to Olympia by emergency C-section. One day later she lost her breath and recognized the warning signs of a serious condition: a life-threatening blood clot in her lungs also known as a pulmonary embolism. She previously experienced these symptoms before so she walked out of her hospital room and approached a nurse. Barely gasping out her words, she said that she feared another blood clot and needed a Computed Tomography (CT) scan and an intravenous injection of heparin, a blood thinner. The nurse suggested that Williams' pain medication must be making her confused. Williams insisted that something was wrong, and a test was ordered, an ultrasound to check for a deep vein thrombosis in her legs. When that test was negative, she was finally sent to get a lung CT. They

found several blood clots. And, just as Williams had suggested, heparin did the trick (Haskell, 2018).

Although Serena Williams is one of the most famous figures in Tennis, she was still confronted with an ubiquitous feature of United States healthcare system: women and people of color are under-treated for most medical conditions. Racial and ethnic disparities in healthcare exist even when insurance status, income, age, and severity of conditions are comparable, and because death rates from cancer, heart disease, and diabetes are significantly higher in racial and ethnic minorities than in whites, these disparities are unacceptable (Institute of Medicine (US) Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care, 2003). Men are 6.5 times more likely to receive catheterization for heart disease than women after normalizing for all other factors (“Gender disparities in clinical decision making. Council on Ethical and Judicial Affairs, United States Medical Association,” 1991). In related studies for kidney disease, women were 50% less likely to receive a kidney transplant. Furthermore, Black patients are about half as likely to be prescribed opioid medicine in the emergency department than white patients (Singhal et al., 2016). There are thousands of similar studies that have examined the effect of race and gender on treatment and most of them agree that women and people of color receive different treatment than their white counterparts with the same symptoms and medical history (Institute of Medicine (US) Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care, 2003).

Research suggests that implicit bias in doctors may contribute to healthcare disparities by shaping their behavior and producing differences in medical treatment along the lines of race, ethnicity, gender, or other characteristics (Chapman et al., 2013). Implicit bias refers to the attitudes or stereotypes that affect our understanding, actions, and decision in an unconscious

manner 5/7/20 5:43:00 PM. Multiple studies confirm that simply knowing about a stereotype distorts processing of information about individuals. Resulting outcomes include unintentionally rating identically performing Black students as less academically capable than Whites and evaluating identically credentialed female applicants as less qualified than males (Hodson et al., 2002). Physicians are not immune to implicit bias. The uncertainty and time pressure surrounding the diagnostic process may promote reliance on stereotypes for fast decision making (Croskerry, 2002). Additionally, physician training emphasizes group level information, like population risk factors, and may expose trainees to minorities in unfavorable circumstances of illness of addition, reinforcing stereotypes. The most commonly used measure of implicit bias is the Implicit Association Test (IAT), a computerized timed dual categorization task that measures implicit preferences by bypassing conscious processing. Green et. al used the IAT to measure implicit bias in physicians and found significant pro-White bias despite no explicitly reported preference for Whites over Blacks (Green et al., 2007).

Co-Production in Healthcare

The term “Co-production,” coined in the late 1970s by economist Elinor Ostrom, describes a process in which contributions from individuals who are not in the same organization are transformed into goods and services (Ostrom, 1996).” Sheila Jasanoff, a scholar in the field of science and technology studies (STS), proposed that the concept of co-production may be used to describe how the “domains of nature, facts, objectivity, reason, and policy [cannot be separated] from those of culture, values, subjectivity, emotions, and politics (Jasanoff, 2004).” Several scholars have suggested bridges between healthcare service and the construct of coproduction. Giddens, for example, refers to the “co-production of public goods” as a central component of the “ensuring state”, and as a process of “collaboration between the state and the

citizen in the production of socially desirable outcomes (Dunston et al., 2009).” Scotland was one of the first countries to incorporate the concept of coproduction in their healthcare policy. In describing the Scottish commitment to advancing effective coproduction in healthcare service, Loeffler et al note that the construct is far reaching and includes potential partnership between health professionals and patients at many levels (Loeffler et al, 2013). In fact one of the biggest downfalls of coproduction in healthcare is how poor health compromises one’s ability to engage in true partnership, and to the complex ways in which payers and regulatory bodies constrain productive interactions between patients and physicians (Ewert & Evers, 2014). One of the distinctive features of coproduction is its ability to bring patients into the decision-making process by reducing the social distance and knowledge and power imbalances between different participants and erasing artificial distinctions between “recipients” and “providers” of services.

The information presented in this thesis highlights a significant downfall in the United States healthcare system that is due to implicit bias and exacerbated by the lack of coproduction and patient participation in healthcare systems. In recent years, many European countries such as the United Kingdom have put co-production at the forefront of their healthcare ideology and policy making (Carr, 2016). This thesis examines the impact of implicit bias on the coproductive process of healthcare and patient-physician interactions as well as patient outcomes.

Additionally, This paper establishes how current coproduction rhetoric such as the one used in the United Kingdom can be used to bring together different values and social relations and empower minority patients to take a more active role in their treatment and help doctors lessen the impact of their implicit bias.

The Effect of Implicit Bias on the Treatment of Women of Color in Healthcare

Implicit bias impacts physicians' ability to effectively communicate and assess patients. Since women of color exist at the intersection of gender and race, implicit bias has a significant impact on the care they receive in United States healthcare systems. Specifically, implicit bias causes providers to spend less time with women of color, ignore their symptoms, dismiss their complaints, and undertreat their pain (Penner et al., 2017). Essentially provider implicit bias limits their ability to effectively communicate with women of color. This breakdown of communication disrupts coproduction of positive healthcare outcomes between providers and patients and leads to worse outcomes for women of color. To further explore the topic above, this section will examine implicit bias in medicine, the experience of women of color as patients, and the healthcare outcomes of women of color. Lastly, this data is examined in the context of the STS framework of co-production and an application of this framework in healthcare is provided.

Implicit Bias in Healthcare

Many studies confirm that implicit bias among physicians exists and impacts clinical decision making in ways that perpetuates healthcare disparities (Dovidio et al., 2008). Research has shown that physicians with higher implicit-bias scores commandeered a greater portion of the patient-physician talk time during appointment than did physicians with lower scores (Hagiwara et al., 2013). This bias does not go undetected, research by Cooper et. al shows physicians with high implicit bias were more likely to dominate conversation with Black patients and that Black patients trusted them less, had less confidence in them, and rated their quality of care as poorer (Cooper, 2012). Even words that physicians use can signal bias, physicians who scored higher in implicit bias are more likely to use words such as “we,” “ours,” or “us” when interacting with Black patients. According to social psychology theories people in power use such verbiage to maintain control over others of less power. Physicians with higher implicit

score are more likely to use language such as “We’re going to take our medicine, right?”

(Physician Racial Bias and Word Use during Racially Discordant Medical Interactions: Health Communication: Vol 32, No 4, 2017).

The effect of implicit bias does not stop at communication. It also negatively impacts the physician’s ability to make correct medical decisions. Studies have found that Black patients seen in emergency departments receive less analgesia than White patients (Heins et al., 2006). Hispanic patients in one study were seven times less likely to receive opioids in the emergency room than non-Hispanic patients with similar injuries, even when adjusting for confounders (Todd et al., 1993). Women are three times less likely than men to receive knee arthroplasty when clinically appropriate (Hawker et al., 2000). Implicit stereotype-based bias also contributed to gender differences in the diagnosis of chronic obstructive pulmonary disease (COPD), even in the face of near comparable smoking rates between men and women and women’s increased susceptibility to the disease (K. R. Chapman et al., 2001). Chapman et. al created a clinical vignette of a middle-aged patient presenting with a chronic cough and a smoking history. All vignettes were identical except for randomly assigned patient gender. Female patients were more likely to receive a diagnosis of asthma or non-respiratory problem, while identical male patients were more likely to be diagnosed with COPD. There are hundreds of similar studies that investigate the impact of implicit bias on different medical conditions and all results point to one clear answer: implicit bias exists in medicine and it negatively impacts women and people of color.

Healthcare Experiences of Female Patients of Color

To fully understand the impact of implicit bias on how women of color are treated in the healthcare system, one must first examine the experience of these women in healthcare settings.

A 2013 survey of Black mothers found that 40% of responders experienced communication issues, and nearly one quarter perceived discrimination during birth hospitalization. Other studies have shown that women of color experience poorer communication quality, information-giving, patient participation, and participatory decision-making than white patients (Shen et al., 2018). Physicians are less patient-centered, more contentious, and show less positive affect to Black female patients whom they perceived as less-effective communicators and less satisfied with care. Black women need to be more assertive to receive more thorough diagnostic testing and are more likely to have negative attributes assigned to them by physicians.

The experience of women of color in healthcare is a result of negative coproduction. Physicians implicit bias and cultural differences leads to them having more difficulty interacting with female patients of color, thus leading to more contentious behavior and less positive impressions. In turn, these patients may struggle in their communication with physicians given past experiences within the healthcare system and are therefore perceived by physicians as worse communicators.

Healthcare Outcomes of Female Patients of Color

Up to this point, the evidence demonstrates the role of implicit bias on healthcare outcomes, but it is important to examine the role of gender and race on healthcare outcomes independently. By examining studies that review the healthcare outcomes of female patients of color, this paper aims to draw a parallel between the effect of implicit bias and the healthcare outcomes of female patients.

African-American, Native United States and Alaska Native women die of pregnancy related causes at a rate about three times higher than those of white women (*Vital Signs: Pregnancy-Related Deaths, United States, 2011–2015, and Strategies for Prevention, 13 States,*

2013–2017 | *MMWR*, 2017). This disparity has grown for years despite attempts to improve access to medical care for women of color. According to the CDC, sixty percent of all pregnancy related deaths can be prevented with better healthcare communication, and support. Additionally, the increased risk of maternal death among racial and ethnic minority women appears to be, at least in part, independent of sociodemographic risk. Adjustment for sociodemographic and reproductive factors has not explained the racial gap in pregnancy-related mortality in most studies. In fact, pregnancy mortality rates for Black women with a college degree are higher than those for white women with just a high school education (Rabin, 2019).

A leading cause of pregnancy-related deaths among women of color is cardiovascular disease, which is not typically associated with young pregnant women. In fact, heart disease and strokes caused more than one-third of pregnancy related deaths based on CDC findings. Cerebrovascular events, such as strokes, were the most common cause of death during the first 42 days after the delivery. These statistics are more startling when put in the context of how women of color are treated for condition. First, doctors are 50% more likely to miss stroke symptoms in women (*ER Doctors Commonly Miss More Strokes Among Women, Minorities and Younger Patients*, 2014). Second, cardiovascular diseases disproportionately affect Black women and are less likely to be detected or treated by physicians (*Why Doctors Still Misdiagnose Heart Disease in Women—The Atlantic*, 2015). The combination of these two biases, gender based and race based, is an example of how the intersectionality of women of color leads to them having three to four times higher pregnancy mortality rates than white women.

Implicit Bias and Coproduction

Coproduction is not a feature that can be “added” to healthcare, but rather, it is an essential character of healthcare services. Even in the most traditional model of medical practice

patients seek physicians for help, the doctor listens and examines the patients and formulates a plan and instructs the patient, the patient interprets these suggestions and outcomes are coproduced. Good outcomes are a result of positive coproduction where the patient and clinician communicate effectively and develop a shared understanding of the problem to generate a mutually acceptable evaluation and management plan. Unlike goods, services like healthcare are produced and consumed simultaneously. This interdependent nature of healthcare can be traced back to the negative impacts of implicit bias. As established in earlier paragraphs, implicit bias disrupts effective communication and collaboration with the patients; and since healthcare outcomes are coproduced, this disruption leads to negative results for patients whom physicians have bias against. Recognizing the impact of implicit bias on coproduction can help policy makers improve medical practices. Bates and Robert have articulated a framework they call experience-based codesign that invites focused attention to the lived experiences of patients, families and health professionals and encourages collaborative work on healthcare system redesign (Bate & Robert, 2007).

Coproduction in Healthcare

Many European countries have adopted the principles of effective coproduction to improve their healthcare services. One example is the Health Foundation's Co-Creating Health Initiative promoted self-management in the NHS. Patients and professionals in England and Scotland were trained to facilitate patient self-management of chronic pain, diabetes, depression and chronic obstructive pulmonary disease. This program focuses on moving healthcare away from "relieving patients" problems to "enabling patients" to address their own medical concerns (*Sustaining and spreading self-management support*, n.d.). In this method, clinical conversations shift from an illness model focused on patient problems to an asset model focused on patient

strength. In the section about the effect of implicit bias and racial prejudice on communication, it was established that biased physicians use language that takes power away from their patients, therefore this new model based on coproduction can counter the impact of implicit bias and empower patients again. More than 600 patients and 900 professionals participated at one Scottish site in two workshops. Both workshops were codelivered by a patient and a clinician. The curriculum included communication skills, strategies for negotiating visit agendas and for articulating goals and monitoring progress. This case study demonstrates how the principles of coproduction can be used to empower patients and give voice back to marginalized communities that have distrust in the medical system.

Further Considerations

Limitations

Empowering patients has different limitations. First is the ability level of different people. Not all patients have the desire or capacity to be active participants in coproducing their healthcare services. For example, patients who cannot speak English or are not as educated might have a harder time establishing goals and boundaries with their physician. Additionally, in the emergency department, operating room and the intensive care unit where quick decisions are the difference between life and death, it is much harder to include the patient in the medical process. Another limitation is the idea of mutual accountability for coproduced outcomes. Theoretically if patients and physicians are equal partners in the process, then the accountability should also be equally shared. However, it is neither possible nor desirable to share power and responsibility equally between patients and professionals.

Future Work

Future work in this topic can focus on the impact of implementing coproduction on implicit bias outcomes. Much like the United Kingdom example, certain health centers in The United States can be selected for a new model of medicine based on coproduction. Before the system is implemented, a study needs to be done on the implicit bias of the physicians in those centers and how that affects their communication with women of color and their ability to correctly diagnose and treatment. After this baseline has been established, the patients and clinicians will be educated on the new model. The study will follow the results of the new model and determine whether physician communication and diagnosis improved after implementation. Patient satisfaction with the care they receive will also be evaluated before and after the coproduction model.

Co-Production and Implicit Bias in Healthcare

In the sections above, it is established that implicit bias negatively impacts physicians' ability to communicate well with patients. Furthermore, this bias leads to doctors chronically misdiagnosing and undertreating patients of color and women. Additionally, most female patients of color report negative experiences in the healthcare system due to racism and sexism. Physicians are less patient centered and more contentious with female patients of color even when factors like medical literacy, socioeconomic status and age are normalized. It is also established that even when implicit bias is not directly studied, women and people of color receive worse treatment than their white male counterparts. Since women of color lay at the intersection of these two marginalized identities, they are continuously oppressed by the medical system. In short, implicit bias negatively impacts the treatment that female patients of color receive by reducing the communication between patients and clinicians. Essentially, implicit bias prevents healthcare professionals from coproducing positive outcomes. This paper builds a case

for restructuring United States healthcare systems based on the principles of coproduction to empower female patients of color and return autonomy to the patient.

Sources

- Bate, P., & Robert, G. (2007). *Bringing User Experience to Healthcare Improvement: The Concepts, Methods and Practices of Experience-based Design*. Radcliffe Publishing.
- Chapman, E. N., Kaatz, A., & Carnes, M. (2013). Physicians and Implicit Bias: How Doctors May Unwittingly Perpetuate Health Care Disparities. *Journal of General Internal Medicine*, 28(11), 1504–1510. <https://doi.org/10.1007/s11606-013-2441-1>
- Chapman, K. R., Tashkin, D. P., & Pye, D. J. (2001). Gender bias in the diagnosis of COPD. *Chest*, 119(6), 1691–1695. <https://doi.org/10.1378/chest.119.6.1691>
- Croskerry, P. (2002). Achieving Quality in Clinical Decision Making: Cognitive Strategies and Detection of Bias. *Academic Emergency Medicine*, 9(11), 1184–1204. <https://doi.org/10.1197/aemj.9.11.1184>
- Dovidio, J. F., Penner, L. A., Albrecht, T. L., Norton, W. E., Gaertner, S. L., & Shelton, J. N. (2008). Disparities and distrust: The implications of psychological processes for understanding racial disparities in health and health care. *Social Science & Medicine* (1982), 67(3), 478–486. <https://doi.org/10.1016/j.socscimed.2008.03.019>
- Dunston, R., Lee, A., Boud, D., Brodie, P., & Chiarella, M. (2009). Co-Production and Health System Reform – From Re-Imagining To Re-Making. *Australian Journal of Public Administration*, 68(1), 39–52. <https://doi.org/10.1111/j.1467-8500.2008.00608.x>
- ER Doctors Commonly Miss More Strokes Among Women, Minorities and Younger Patients—04/03/2014*. (n.d.). Retrieved February 20, 2020, from https://www.hopkinsmedicine.org/news/media/releases/er_doctors_commonly_miss_more_strokes_among_women_minorities_and_younger_patients

- Ewert, B., & Evers, A. (2014). An Ambiguous Concept: On the Meanings of Co-production for Health Care Users and User Organizations? *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 25(2), 425–442. <https://doi.org/10.1007/s11266-012-9345-2>
- Gender disparities in clinical decision making. Council on Ethical and Judicial Affairs, United States Medical Association. (1991). *JAMA*, 266(4), 559–562.
- Green, A. R., Carney, D. R., Pallin, D. J., Ngo, L. H., Raymond, K. L., Iezzoni, L. I., & Banaji, M. R. (2007). Implicit Bias among Physicians and its Prediction of Thrombolysis Decisions for Black and White Patients. *Journal of General Internal Medicine*, 22(9), 1231–1238. <https://doi.org/10.1007/s11606-007-0258-5>
- Hagiwara, N., Penner, L. A., Gonzalez, R., Eggly, S., Dovidio, J. F., Gaertner, S. L., West, T., & Albrecht, T. L. (2013). Racial attitudes, physician–patient talk time ratio, and adherence in racially discordant medical interactions. *Social Science & Medicine*, 87, 123–131. <https://doi.org/10.1016/j.socscimed.2013.03.016>
- Haskell, R. (n.d.). *Serena Williams on Motherhood, Marriage, and Making Her Comeback*. Vogue. Retrieved February 8, 2020, from <https://www.vogue.com/article/serena-williams-vogue-cover-interview-february-2018>
- Hawker, G. A., Wright, J. G., Coyte, P. C., Williams, J. I., Harvey, B., Glazier, R., & Badley, E. M. (2000). Differences between Men and Women in the Rate of Use of Hip and Knee Arthroplasty. *New England Journal of Medicine*, 342(14), 1016–1022. <https://doi.org/10.1056/NEJM200004063421405>
- Heins, J. K., Heins, A., Grammas, M., Costello, M., Huang, K., & Mishra, S. (2006). Disparities in analgesia and opioid prescribing practices for patients with musculoskeletal pain in the

emergency department. *Journal of Emergency Nursing: JEN: Official Publication of the Emergency Department Nurses Association*, 32(3), 219–224.

<https://doi.org/10.1016/j.jen.2006.01.010>

Hodson, G., Dovidio, J. F., & Gaertner, S. L. (2002). Processes in Racial Discrimination:

Differential Weighting of Conflicting Information. *Personality and Social Psychology Bulletin*, 28(4), 460–471. <https://doi.org/10.1177/0146167202287004>

Institute of Medicine (US) Committee on Understanding and Eliminating Racial and Ethnic

Disparities in Health Care. (2003). *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care* (B. D. Smedley, A. Y. Stith, & A. R. Nelson, Eds.). National Academies Press (US). <http://www.ncbi.nlm.nih.gov/books/NBK220358/>

Jasanoff, S. (2004). *States of Knowledge: The Co-Production of Science and the Social Order*.

Routledge.

Kassebaum, N. J., Barber, R. M., Bhutta, Z. A., Dandona, L., Gething, P. W., Hay, S. I., Kinfu, Y., Larson, H. J., Liang, X., Lim, S. S., Lopez, A. D., Lozano, R., Mensah, G. A., Mokdad, A. H., Naghavi, M., Pinho, C., Salomon, J. A., Steiner, C., Vos, T., ... Murray, C. J. L. (2016). Global, regional, and national levels of maternal mortality, 1990–2015: A systematic analysis for the Global Burden of Disease Study 2015. *The Lancet*,

388(10053), 1775–1812. [https://doi.org/10.1016/S0140-6736\(16\)31470-2](https://doi.org/10.1016/S0140-6736(16)31470-2)

Ostrom, E. (1996). Crossing the great divide: Coproduction, synergy, and development. *World*

Development, 24(6), 1073–1087. [https://doi.org/10.1016/0305-750X\(96\)00023-X](https://doi.org/10.1016/0305-750X(96)00023-X)

Penner, L. A., Phelan, S. M., Earnshaw, V., Albrecht, T. L., & Dovidio, J. F. (2017). Patient

stigma, medical interactions, and health care disparities: A selective review. *The Oxford*

Handbook of Stigma, Discrimination, and Health, 183–201.

<https://doi.org/10.1093/oxfordhb/9780190243470.001.0001>

PhD, S. C. (2016, August 29). Can Co-production Really Transform UK Mental Health

Services? *Mad In The United States*. <https://www.madinthe United>

[States.com/2016/08/can-co-production-really-transform-uk-mental-health-services/](https://www.madinthe United States.com/2016/08/can-co-production-really-transform-uk-mental-health-services/)

Physician Racial Bias and Word Use during Racially Discordant Medical Interactions: Health

Communication: Vol 32, No 4. (n.d.). Retrieved February 20, 2020, from

<https://www.tandfonline.com/doi/abs/10.1080/10410236.2016.1138389>

Pregnancy Mortality Surveillance System | Maternal and Infant Health | CDC. (2020, February

4). [https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-](https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm)

[surveillance-system.htm](https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm)

Rabin, R. C. (2019, May 7). Huge Racial Disparities Found in Deaths Linked to Pregnancy. *The*

New York Times. <https://www.nytimes.com/2019/05/07/health/pregnancy-deaths-.html>

Shen, M. J., Peterson, E. B., Costas-Muñiz, R., Hernandez, M. H., Jewell, S. T., Matsoukas, K.,

& Bylund, C. L. (2018). The Effects of Race and Racial Concordance on Patient-

Physician Communication: A Systematic Review of the Literature. *Journal of Racial and*

Ethnic Health Disparities, 5(1), 117–140. <https://doi.org/10.1007/s40615-017-0350-4>

Singhal, A., Tien, Y.-Y., & Hsia, R. Y. (2016). Racial-Ethnic Disparities in Opioid Prescriptions

at Emergency Department Visits for Conditions Commonly Associated with Prescription

Drug Abuse. *PLOS ONE*, 11(8), e0159224. <https://doi.org/10.1371/journal.pone.0159224>

Stereotypes and prejudice: Their automatic and controlled components. (n.d.). Retrieved

February 8, 2020, from <https://psycnet.apa.org/fulltext/1989-15262-001.html>

Sustaining and spreading self-management support. (n.d.). The Health Foundation. Retrieved February 21, 2020, from <https://www.health.org.uk/publications/sustaining-and-spreading-self-management-support>

The Associations of Clinicians' Implicit Attitudes About Race With Medical Visit Communication and Patient Ratings of Interpersonal Care. (n.d.). Retrieved February 20, 2020, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3483913/>

Todd, K. H., Samaroo, N., & Hoffman, J. R. (1993). Ethnicity as a risk factor for inadequate emergency department analgesia. *JAMA*, 269(12), 1537–1539.

Vital Signs: Pregnancy-Related Deaths, United States, 2011–2015, and Strategies for Prevention, 13 States, 2013–2017 | MMWR. (n.d.). Retrieved February 20, 2020, from https://www.cdc.gov/mmwr/volumes/68/wr/mm6818e1.htm?s_cid=mm6818e1_w

Why Doctors Still Misdiagnose Heart Disease in Women—The Atlantic. (n.d.). Retrieved February 20, 2020, from <https://www.theatlantic.com/health/archive/2015/10/heart-disease-women/412495/>