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Transdermal contraception and reproductive justice: bridging gaps for women of color



Brandon Poppe¹✉, Roxana Nouri-Nikbakht², Jennifer Codd¹, Jennifer Concepcion³, Laura Mercer⁴ & Rachel Bond¹

Women of color have faced centuries of racial discrimination in medicine, a reality that continues today. This commentary examines the historical and contemporary disparities in reproductive health with a specific discussion about transdermal contraception. We review the history and discriminatory impact of the transdermal contraceptive over the past two decades. Lastly, we discuss current innovations and opportunities for improvement and provide recommendations for addressing these disparities to advance reproductive justice for all.

Why do disparities exist? Understanding the historical context of reproductive health

The history of reproductive health challenges for women of color in the United States (U.S.) is deeply rooted in systemic racism, including forced sterilization, medical experimentation without consent during slavery, and ongoing disparities in access to quality healthcare. Moreover, the development of contraception exploited vulnerable populations and targeted specific races, purposefully attempting to limit their reproductive autonomy, or one's ability to make personal choices regarding contraceptive use, pregnancy, childbearing, abortion, or sterilization¹.

In 1808, the Act Prohibiting Importation of Slaves took effect, marking a significant shift in the U.S. slave economy. While it did not abolish slavery, the law ended the legal transatlantic slave trade, forcing the market to turn inward. As a result, domestic slave trading and forced reproduction became increasingly common. Slave breeding emerged as a widespread and brutal practice in which enslaved women were coerced into having children to sustain and grow the enslaved population. Some were manipulated with promises of better living conditions, material rewards, or the hope of eventual freedom. Others were subjected to violence, threats (such as the sale of loved ones), or outright physical and sexual abuse, including forced pairings and assaults. The children born from these practices effectively replaced those who would have been brought from Africa, further entrenching the institution of slavery in the United States². Further, some reproductive-aged women were bought and traded to be used in medicine as test subjects to expand medical knowledge³.

In 1831, Francios-Marie Prevost published his technique on how to perform a cesarean section, which he developed by practicing on enslaved women³. Between 1845 and 1849, James Marion Sims pioneered the surgical treatment for vesicovaginal fistula by conducting repeated experimental

procedures on enslaved black women, including Anarcha, Lucy, and Betsey. These surgeries were performed without anesthesia, informed consent, or regard for the women's autonomy, and often involved forced restraint. While his work contributed to the development of modern gynecology, it came at the profound ethical cost of exploiting vulnerable, powerless individuals. This legacy of medical abuse contributes to the continued mistrust many black women hold toward the reproductive health system today^{3,4}.

In the early to mid-1900s, Margaret Sanger emerged as a prominent and influential figure in the birth control movement, becoming widely recognized for her pioneering role in advancing reproductive rights in the United States. However, her motivations behind this effort were largely rooted in racism and eugenics. Although scholars debate about Sanger's true views on race-based politics, given the lack of primary documentation, it is well known that Sanger supported eugenics, or forced sterilization, as a tool to prevent "ill, weak, and feeble-minded" populations from reproducing, as Sanger thought these populations were more likely to reproduce. Others interpret some of her work as plans for "Black genocide," as Sanger seemed to be in favor of using birth control to eliminate the Black population. Sanger's intense support of using contraception on the Black population raised suspicion among African-Americans who felt as if they were being eradicated from society, and created a lasting sentiment that may still impact women of colors' choice in using contraception today⁵.

Therefore, it is essential to examine this historical context in order to fully understand the impact that these experiences have had on the overall health of women of color. Given this history of trauma, women of color often harbor distrust toward the medical system and its practitioners. This history of discrimination has significantly restricted reproductive autonomy, defined as the human right to control one's body, sexuality, gender, and reproductive choices ([https://blackrj.org/our-causes/reproductive-](https://blackrj.org/our-causes/reproductive-justice)

¹Creighton University East Valley Arizona, Chandler, AZ, USA. ²George Washington University, Washington, DC, USA. ³University of Miami Jackson Memorial Hospital, Miami, FL, USA. ⁴The University of Arizona College of Medicine - Phoenix, Phoenix, AZ, USA. ✉e-mail: brandon.poppe@commonspirit.org

justice/). Expanding equitable access to and choice of contraception is a modern solution to improving reproductive autonomy, and transdermal contraceptives represent an important starting point.

Transdermal contraceptive equitable access and use

Transdermal contraceptives deliver estrogen and progestin and are favored for their once-weekly application, unlike oral contraceptive pills that require daily use. They are also a reasonable choice among women who do not want a contraceptive in their body, such as with the subdermal arm implant or intrauterine device⁶. The cost and effectiveness of transdermal contraceptives are comparable to oral contraceptives, and compliance is even greater with the patch⁷⁻⁹. It has been discovered that the patch is associated with higher cost savings in younger age groups, likely due to prevention of pregnancy¹⁰. Additionally, the patch is often preferred due to its steady release of hormones (which avoids peaks and troughs), and the avoidance of first-pass metabolism in the gastrointestinal tract for patients with gastrointestinal disorders⁶.

The first transdermal contraceptive was made available in the U.S. in 2002. This patch, called Ortho Evra (norelgestromin/ethinyl estradiol), was released in only one color: light nude. A clear patch was created the same year, but clinical trials did not yield promising results, reporting that it appeared “grimy” after one week, and ultimately, the company claimed they did not have the technology at the time to create more color options (<https://www.wsj.com/articles/SB105968155271289900>). In 2014, Ortho Evra was discontinued in the U.S. after the FDA approved Xulane, a generic hormonal birth control patch. However, despite decades of advancements, the only three transdermal contraceptive options currently available in the U.S. (Xulane, Twirla, and Zafemy) are still offered in just one color: light nude. This lack of inclusivity in skin-tone options exemplifies racial discrimination in medicine and contradicts the American College of Obstetricians and Gynecologists’ (ACOG) policy against prejudice.

ACOG calls for “quality health care appropriate to every woman’s needs...assuring that a full array of clinical services be available to women without...the imposition of cultural...barriers (<https://www.acog.org/en/clinical-information/policy-and-position-statements/statements-of-policy/2019/access-to-womens-health-care>)”. Additionally, in a 2022 policy statement, ACOG reported a commitment “to eliminating racism and racial inequities that lead to disparate health outcomes through deep reflection, listening, accountability, collaboration, and direct action (<https://www.acog.org/en/clinical-information/policy-and-position-statements/statements-of-policy/2022/racism-in-obstetrics-gynecology>)”. The color restriction of the patch imposes barriers for women of color and jeopardizes quality healthcare for this already vulnerable population.

Concerns of women of color regarding the patch

We have presented the historical context of racial discrimination in reproductive and maternal healthcare experienced by women of color and examined how these patterns have shaped their perceptions of the healthcare system. Despite significant efforts within the medical community to reduce structural barriers and discriminatory practices, these perceptions remain prevalent. A 2024 cross-sectional survey of nearly 1300 women across varying skin tones demonstrated that women with darker skin reported avoiding birth control use due to concerns about discrimination at a significantly higher rate compared with women of the lightest skin tones¹¹. Furthermore, multiple studies evaluating the contraceptive patch have identified specific concerns among women of color, including issues of visibility, limited discretion, and the absence of adequate color inclusivity.

The CHOICE study, which evaluated people’s perceptions regarding contraception, showed that of those who chose the pill or

the Nuvaring, 53% did not choose the patch because it was “visible” and “not discrete”¹². Furthermore, a longitudinal trial following people using Ortho Evra reported complaints regarding the color of the patch and increased visibility against certain skin tones. Another study that focused on adolescent women using Ortho Evra found that 32% would prefer another patch color¹³. Lastly, a group-oriented study that included racially and ethnically diverse young women ($n = 113$, 46% African-American) found that while participants liked the patch for its ease of remembering to use it, they did not like the visibility issues that came with it¹⁴. There is a paucity of data specifically examining the perspectives of women of color regarding the transdermal contraceptive patch, particularly in terms of discretion, visibility, and overall comfort within the context of racial identity. The limited evidence that does exist suggests that these concerns represent a significant and insufficiently addressed issue, warranting further investigation.

A study analyzing the last two decades of US clinical trials found a staggering difference in representation between white participants and participants of color (80% White, 10% Black, 6% Latino)¹⁵. Research in contraception and reproductive health suffers from the same underrepresentation, even including the CHOICE study above. The limited representation that women of color have had in medical research highlights a dire need for adequate data to strengthen the fight for change in reproductive justice and contraceptive choice.

There remains a gap between the availability of effective contraceptive methods and their actual use among women of color, driven by a longstanding mistrust of the medical field. A National Survey of Reproductive and Contraceptive Knowledge found that black women were more likely than white women to believe that the government promotes contraception to limit minority populations and were skeptical of the government’s commitment to contraceptive safety¹⁶. Given these existing concerns, women of color should not face further limitations in contraceptive choice due to a lack of inclusive skin-tone options for the transdermal contraceptive. This restriction reduces both reproductive choice and justice.

Current innovation to combat reproductive health disparities in contraceptive use

Despite the lack of progress in creating more skin-tone options for transdermal contraceptives over the past two decades, recent research has attempted to reevaluate the patch. A study performed in India and Nigeria assessed women’s preferences regarding the location and size of a transdermal contraceptive¹⁷. Another study in 2019 developed and tested the efficacy and viability of incorporating the contraceptive transdermal delivery system into pharmaceutical jewelry in order to increase medication acceptability and adherence¹⁸. These studies share the overall goal of increasing acceptability, discretion, and privacy of the patch. However, despite efforts to improve usability and acceptability, the fundamental issue of color inclusivity remains overlooked in both research and product development.

Hungary’s largest drugmaker, Gedeon Richter, partnered with the German pharmaceutical company, Bayer, in 2015 to create a transparent contraceptive with the goal of “aiming towards the improvement of the quality of life for the female population in all age groups (<https://bbj.hu/business/industry/pharma/richter-to-market-bayer-s-contraceptive-patch/>)”. This innovative product has come the closest to providing women with both discretion and privacy while using the patch since the creation of the Ortho Evra patch twenty years ago, but it is not currently available in the United States.

Perhaps a beacon of hope, Band-Aid created adhesive bandages in a variety of skin tones in 2005¹⁹. Additionally, Sephora has recently launched its Color iQ foundation matching service as part of its Diversity, Equity, and Inclusion commitments ([https://consumergoods.com/sephora-applies-new-ai-technology-inclusive-color-iq-relaunch#:~:text=The%20beauty%20retailer%20will%20relaunch,tells%20CGT's%20sister%20brand%2C%](https://consumergoods.com/sephora-applies-new-ai-technology-inclusive-color-iq-relaunch#:~:text=The%20beauty%20retailer%20will%20relaunch,tells%20CGT's%20sister%20brand%2C%20)

20RIS.). With such innovative progress towards racial inclusivity, it is surprising that this technology has not been applied to individualizing the transdermal contraceptive, but this opens opportunities for future research.

Limitations of the patch

Limitations of the patch exist in the realm of weight and BMI, especially for non-Hispanic black women, and increased risk of deep vein thrombosis (DVT) and pulmonary embolism (PE). The birth control patches Twirla, Xulane, and Zafemy are contraindicated in women with a BMI > 30 kg/m² due to decreased efficacy and increased risk of venous thromboembolism. For Twirla specifically, there is a reduced effectiveness in women with a BMI between 25 and 30 kg/m², and Xulane and Zafemy may be less effective in women who weigh > 90 kg, regardless of BMI²⁰. These restrictions are exemplified in non-Hispanic black women. Data from the 2011–2012 National Health and Nutrition Examination Survey (NHANES) indicated that while 34.9% of the adults ≥20 years old had obesity, its prevalence reached 36.1% among women, and it was higher among non-Hispanic Black (56.6%) and Hispanic (44.4%) women than among non-Hispanic white (32.8%) women²¹.

Conclusion & Future Directions

Future research should prioritize including more underrepresented participants and designing and testing a transdermal contraceptive for a variety of skin tones, as current data suggests a demand for such options. Increased awareness of this issue may garner enough support for manufacturers to explore additional color options and may help expedite research in the technology required to create individualized patches.

The exclusive use of a limited color, such as light nude, for transdermal contraceptives is a modern example of how health disparities can undermine patient care. Women of color deserve equitable access to reproductive health options that honor their autonomy without compromising discretion or comfort. Expanding inclusive design in contraceptive options can help reduce barriers, improve adherence, lower unintended pregnancy rates, and ultimately enhance quality of care. These efforts are vital in addressing systemic racial bias in medicine.

Data availability

No datasets were generated or analyzed during the current study.

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Author contributions

All authors assisted in writing the main manuscript text and reviewed the manuscript prior to submission.

Competing interests

The authors declare no competing interests.

Additional information

Correspondence and requests for materials should be addressed to Brandon Poppe.

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