
AJPM FOCUS

INCLUSIVITY IN PEOPLE, METHODS, AND OUTCOMES

REVIEW ARTICLE

Measurement and Operationalization of the Social Determinants of Health and Long-Acting Reversible Contraception Use in the U.S.: A Systematic Scoping Review



Margaret Mary B. Downey, PhD,¹ Catherine Patteson Poehling, DSW,² Samantha O'Connell, MS³

Introduction: The objective of this review was to conduct a systematic evaluation of the measurement and operationalization of the social determinants of health in research on long-acting reversible contraception use in the U.S. To contribute to the ongoing refinement of the quality of social determinants of health and long-acting reversible contraception use research, this systematic scoping review examines how social determinants of health are measured and operationalized in studies that examine long-acting reversible contraception initiation and usage at the patient level.

Methods: A detailed search of 5 electronic databases (PubMed, Embase, Web of Science, CINAHL, and PsycINFO) was conducted between December 2020 and January 2021 according to PRISMA guidelines. Determinants were assessed using the Dahlgren and Whitehead model. The protocol and data extraction template were developed a priori.

Results: A total of 27 articles representing 26 studies were included in our study. A total of 12 studies were retrospective and cross-sectional in design; the remaining studies were a combination of designs. Healthcare services and health insurance were identified as the most frequently researched categories of determinants. There was wide variation in reported operationalization of race and ethnicity, limited engagement with sexuality, and uneven geographic representation across studies.

Discussion: This systematic scoping review is the first, to the best of our knowledge, to focus on the measurement and operationalization of social determinants of health and on current long-acting reversible contraception use research. Future research on the impact of social determinants of health on long-acting reversible contraception use must explore the full range of factors shaping contraceptive decision making and use and focus on equity-informed data collection methods and reporting.

AJPM Focus 2022;1(2):100032. © 2022 The Authors. Published by Elsevier Inc. on behalf of The American Journal of Preventive Medicine Board of Governors. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

INTRODUCTION

Long-acting reversible contraceptives (LARCs) such as intrauterine devices (IUDs) or implants are considered some of the most innovative reproductive health technologies of contemporary medicine.¹ Public health and medical professionals endorse LARC as a means of preventing unintended pregnancy because of its high

From the ¹Tulane University School of Social Work, New Orleans, Louisiana; ²School of Social Work, College of Education and Human Sciences, the University of Southern Mississippi, Hattiesburg, Mississippi; and ³Tulane University Office of Academic Affairs & Provost, New Orleans, Louisiana

Address correspondence to: Margaret Mary B. Downey, PhD, Tulane University School of Social Work, 127 Elk Place, 3rd Floor, New Orleans LA 70112. E-mail: mdowney2@tulane.edu.

2773-0654/\$36.00

<https://doi.org/10.1016/j.focus.2022.100032>

effectiveness and low rate of human error.^{2,3} Unintended pregnancy rates across racial, ethnic, and socioeconomic groups are considered a persistent clinical and public health problem because of the association of unintended pregnancy with adverse maternal and infant health, financial outcomes, and social outcomes (e.g., decreased educational attainment).^{2,4,5} Therefore, some public health and medical professionals cite LARC as a means to not only prevent pregnancy but also help to achieve overall public health and health equity.^{2,3,6} Meanwhile, others raise concerns about overpromotion of LARC at the expense of patient preferences and autonomy, particularly for groups who face stigma, coercion, or bias from healthcare providers.^{7–9} In both positions, scholars agree that understanding the social factors shaping contraceptive decision making is critical to meeting patient needs and overall public health. Thus, a growing body of literature shows increasing attention to the social determinants of health (SDOH) that influence LARC initiation and usage.¹⁰

The SDOH framework emphasizes factors above individual behavior, biology, or genetics such as the conditions in which patients live, work, learn, and play that shape health status.^{11,12} Specifically, research studies may examine which SDOH among many (e.g., insurance status, educational attainment) are associated with LARC initiation and usage with the goal of increasing initiation and use of these contraceptives in groups with comparatively low rates. Although previous scholarship has reviewed some social determinants that impact LARC use,¹⁰ this review explicitly focuses on factors above the individual level. This decision is in keeping with guidance from Dahlgren and Whitehead, developers of a widely cited rainbow model of the SDOH, as well as from other leading SDOH researchers.¹³ As noted by Dahlgren and Whitehead and others, there is a need to tackle the wider SDOH in the rainbow model, referring to social and community networks; living and working conditions (i.e., water and sanitation, agriculture and food, health and social care services, unemployment and welfare, working conditions, housing and living environment, education, and transport); and general socioeconomic, cultural, and environmental conditions because individual behavior, biology, physiology, genetics, or lifestyle factors such as exercise and smoking have been overemphasized in the literature.¹³ To date, no systematic review of SDOH and LARC use has explicitly engaged with the wider aspects of the SDOH framework.

Meanwhile, there is no consensus on how to measure and operationalize social determinants in reproductive and other health research.¹³ Recent systematic reviews and meta-analyses have addressed critical gaps in our understanding of, for example, LARCs, condom use, and

sexually transmitted infections,¹⁴ or patient preferences for contraceptive counseling.¹⁵

To contribute to the ongoing refinement of the quality of SDOH and LARC use research, this systematic scoping review examines how SDOH are measured and operationalized in studies that examine LARC initiation and usage at the patient level. Moreover, as scholars call for a more nuanced framing of the SDOH that includes its wider tiers (e.g., racism, wealth inequality, social stigma),^{12,13} this review considers the ways in which current research on LARC and the SDOH does or does not offer a critical engagement with the breadth and complexity of the SDOH framework.

METHODS

A systematic scoping review of the literature was conducted using the PRISMA format. In consultation with a research librarian, a search strategy and database selection were developed. Ultimately, a search for published articles through January 2021 was conducted in 5 electronic databases: PubMed, Embase, Web of Science, CINAHL (Cumulative Index to Nursing and Allied Health Literature), and PsycINFO. Terms to capture contraceptive methods of interest (i.e., LARCs, IUD, implant) as well as their abbreviations, associated brand names, and synonyms (e.g., birth control) were included. Terms including *SDOH*, *health equity*, and *health disparity* as well as their associated terms were included to develop a comprehensive understanding of the literature. Terms related to specific aspects of the SDOH framework, such as *housing*, *health care*, *insurance*, *stigma*, *income*, *community*, and *occupation* were also included. A search strategy is included in [Appendix A](#) (available online). Initially, search terms related to contraceptive injections (e.g., *Depo-Provera*) were included. However, these terms were excluded from this analysis because after consensus, it was concluded that this method did not meet strict criteria for reversibility. Although active for up to 14 weeks, potentially meeting the criteria for long-acting, the contraceptive injection cannot be removed once administered as can the IUD and implant. For the purposes of this review, studies needed to focus on current use and/or initiation at the patient/individual level as a primary outcome variable. Studies were excluded if they dealt primarily with patient/individual perceptions, knowledge, or attitudes around LARCs where patients/individuals were not initiating or using LARC at the time of the study. Although the current review is not registered with PROSPERO (the International Prospective Register of Systematic Reviews), the protocol and data extraction template were developed *a priori*. Protocol, template data collection forms, extracted data, and all data used for analysis are available on request.

Study search and inclusion process proceeded until January 2021. Manual searches of relevant studies' references were conducted to capture any additional sources, with included studies published after 2005. This year was selected because it represents an increase in peer-reviewed, English-language scholarship published on the SDOH.¹⁶ Studies could be qualitative, quantitative, or mixed-methods primary research; be conducted in the U.S.; have included adults aged ≥ 18 years, and have examined at least one SDOH. LARC use (i.e., a continuation of a LARC; initiation of a LARC or use for the

first time; or uptake, the returning to use after a period of nonuse) was a primary outcome measure. Studies were excluded if they focused on LARC provision immediately after delivery, immediately after abortion, or when used as emergency contraception because such cases involve a set of factors (e.g., unique clinical guidelines) that warrant separate analysis. Studies with adolescents were also excluded; adolescents experience specific regulations and settings (e.g., school based) for contraceptive care. Finally, studies were excluded on the basis of publication type (e.g., abstract).

Three reviewers (MMBD, CP, and SOC) screened titles and abstracts. Full texts of articles deemed eligible after title and abstract screening were assessed by 2 reviewers (MMBD, SOC) to verify inclusion. All reviewers independently and in duplicate screened a subset of 221 records to establish consistency; the remaining titles and abstracts were then divided among MMBD and SOC. Covidence, a web-based software platform, was used for screening and management of imported references. Next, reviewers met to discuss conflicts in Covidence and develop consensus; the most common topics of discussion were whether LARC use was a primary outcome and whether factors were social

determinants. [Figure 1](#) presents the PRISMA diagram. Given the focus of this review on a critical application of the SDOH, we did not include studies where (1) race was treated as an individual physiologic, biological, or genetic variable and (2) where socioeconomic status was measured as an individual-level variable. Studies that explicitly stated that race was examined as a social construct were eligible. Meanwhile, studies that examined health services' interventions to decrease the cost of LARC were eligible because although arguably impacting socioeconomic status, these studies fall under the living and working conditions tier of the rainbow model, that is, emphasize the layers of the SDOH framework beyond individual patient characteristics.

Data from full texts were independently (MMBD and SOC) extracted using a standardized data form created in Qualtrics. Reviewers (MMBD, CP) then conducted a narrative synthesis of extracted information from analysis on individual studies to determine how they measured or operationalized an SDOH, to determine its impact on LARC use, and to identify overall themes and patterns in studies' quality, methodologic approaches, and design. Reviewers met during each phase of research to discuss

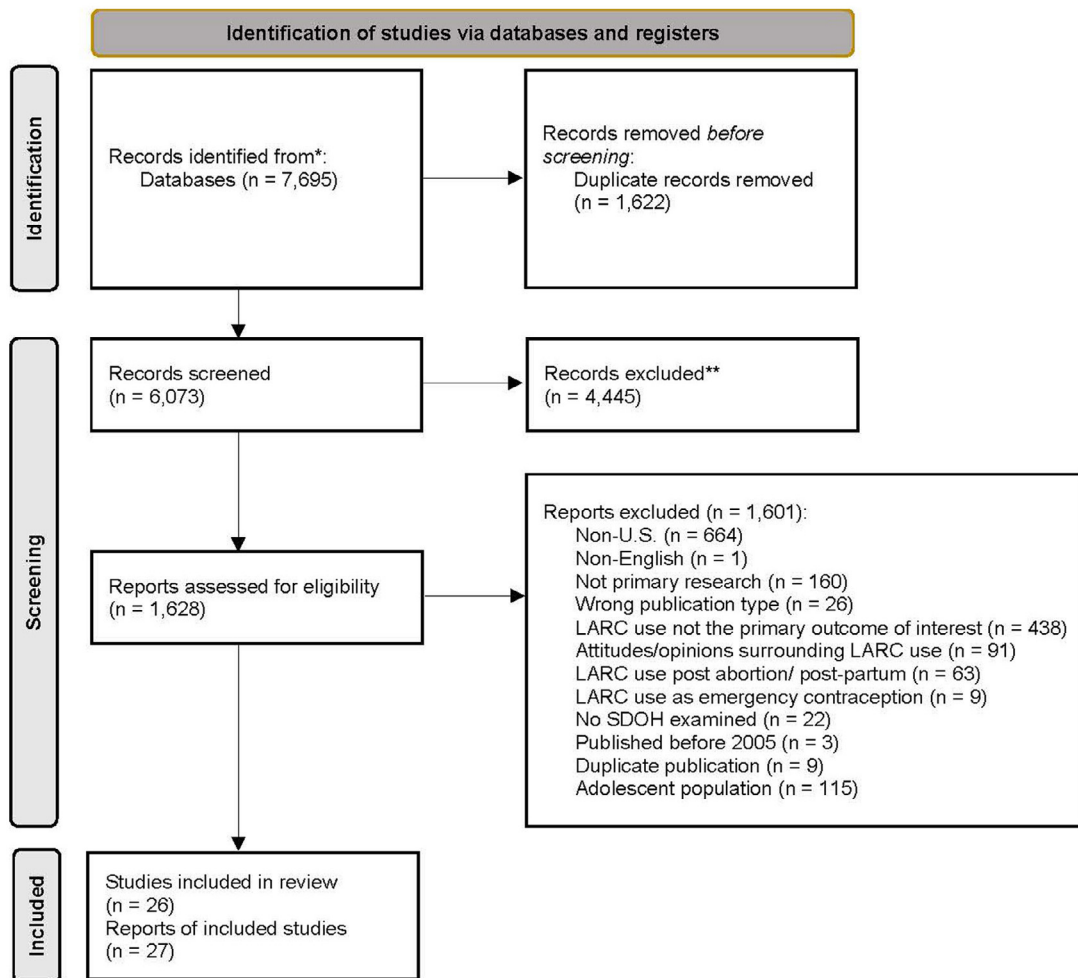


Figure 1. PRISMA flow diagram.

LARC, long-acting reversible contraception; SDOH, social determinants of health.

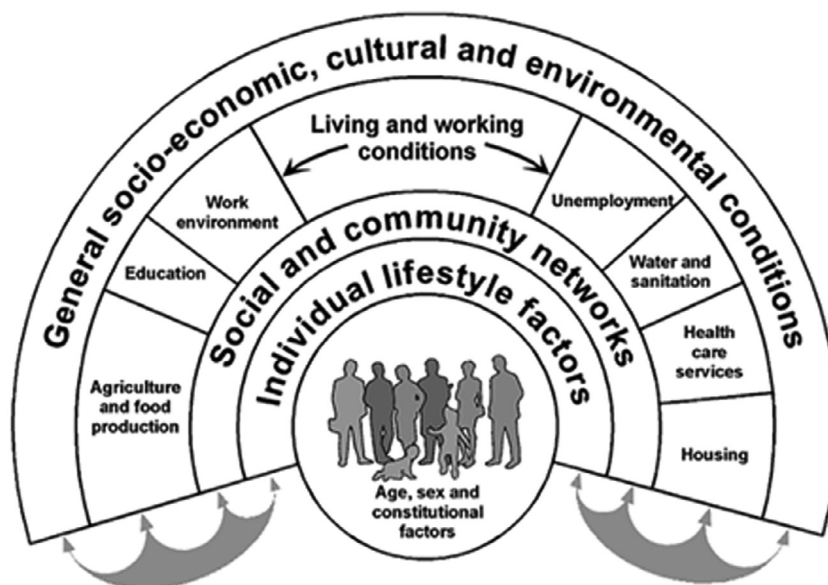


Figure 2. The Dahlgren and Whitehead Rainbow Model, 2021 (reused with permission).

challenges and discrepancies and reach consensus. The most common topic for discussion was where a factor fit into the Dahlgren and Whitehead model¹³ (Figure 2). The model was repeatedly referenced by all reviewers to assist with the development of the extraction form and with analysis. To assess for study bias, 2 reviewers (MMBD and SOC) independently applied an adapted version of the Joanna Briggs Institute's critical appraisal checklist for analytical cross-sectional quality assessment (Appendices B and C, available online).¹⁷ Most studies were cross-sectional, therefore combining relevant questions from other forms into one checklist was a pragmatic approach to evaluation. Following the recommendations from Munn et al.,¹⁸ checklists were used to systematically assess for overall quality, identify any major threats to validity, and gather a comprehensive portrait of the data rather than to numerically score studies. None of the studies for full-text review were excluded owing to concerns over quality.

RESULTS

Of the 27 articles representing 26 studies, the most frequent study designs were cross-sectional and retrospective: retrospective cohort studies ($n=9$) and retrospective medical chart or record review ($n=3$). Study designs are summarized in Appendix D (available online). A total of 23 studies examined use across the hormonal IUD, non-hormonal IUD, and implant; 2 of these specifically compared use of IUD with that of implant; and 3 studies examined the hormonal and nonhormonal IUD. Sample sizes ranged from 87 to 3,794,793. Of the 26 studies included, 5 included data from university health centers, 3 included data from Title X-funded clinics, 2 included data from family planning clinics, 2 included data from Planned Parenthood clinics, and 1 included data from a

community health center. Two were conducted with data from county jails. One study used data from a private practice medical group office setting. The remaining studies utilized state (e.g., California Women's Health Survey) or national (e.g., the National Survey of Family Growth, Veteran's Health Administration clinical data sets) data sets. Studies were published between 2007 and 2020.

In accordance with the Dahlgren and Whitehead's commentary on the rainbow model¹³ and previous scholarship on the SDOH framework,^{12,16,19} articles were included if the primary exposure variable was not an individual behavior or lifestyle factor (e.g., smoking, exercise), biology or physiology (e.g., weight), or genetics. If a study examined participants' race and/or ethnicity and LARC as a nonbiological, nongenetic factor, this was considered an SDOH because of consensus within our research team and in a range of leading health scholarship on race and ethnicity being social constructs and not biological or genetic.²⁰ Two articles fit this criterion. One study fit the Dahlgren and Whitehead description of social and community networks, that is, marital status.²¹ Table 1²¹⁻⁴² summarizes where studies fit into the Dahlgren and Whitehead model.

Most articles examined SDOH in the living and working conditions level of the Dahlgren and Whitehead model. Healthcare services ($n=9$), health insurance ($n=5$), healthcare services and health insurance ($n=1$), education ($n=2$), and housing ($n=2$) were the specific categories of factors examined in this level. Our review confirms previous findings that many SDOH studies

Table 1. Social Determinants and LARC Use Identified in Included Studies vs. Levels of Dahlgren and Whitehead Model

Dahlgren and Whitehead Model Levels	Social determinants
General socioeconomic, cultural, and environmental conditions	Heteronormativity ²² Racial discrimination (experienced by Veterans) ²³
Living and working conditions	Healthcare services ^{24–29} Health insurance ^{30–34} Healthcare services and health insurance ³⁵ Housing (for Veterans) ^{36,37} Education ^{38,39}
Social and community networks	Sexual satisfaction ^{40,41} Marital status ²¹
Individual lifestyle factors	N/A
Age, sex, and constitutional factors (nonbiological, physiologic, or genetic)	Race and/or ethnicity and nativity ²² Race and/or ethnicity ⁴²

N/A, not applicable.

examine healthcare services or health insurance. Examining education and housing are more novel contributions to the SDOH and LARC use literature. Notably, both articles examining housing were from the same study of women Veterans and their contraceptive use.^{36,37} Two studies examined factors at the general socioeconomic, cultural, and environmental conditions level of the model. One study examined the number of patients who identify as a sexual minority at a family planning clinic who seek LARCs through the lens of heteronormativity or the social norm dictating that heterosexuality is the default or preferred expression of sexuality. The second study examined racism as experienced by women Veterans seeking LARCs. A narrative summary of articles on the living and working conditions and general socioeconomic, cultural, and environmental conditions of the Dahlgren and Whitehead model is presented in the following paragraphs.

Within healthcare services, studies ($n=9$) examined aspects of clinical practice that reduced barriers to access (i.e., wait time for insertion) or improved patient knowledge, showing some positive determinants of LARC use. One study (a randomized cluster trial) looked at both healthcare services and health insurance status, that is, public funding for LARC and provider training.³⁵ Positive determinants included changes to an appointment scheduling script that increased contact with and reminders for patients,⁴³ changes to a counseling script to include discussion of self-removal,⁴⁴ a revolving loan fund that reduced clinic cost and patient wait time,⁴⁵ and source of care (women receiving care from family planning clinics had lower odds of LARC use than those receiving care from a private doctor's office or health maintenance organization facility).²⁴

Within health insurance ($n=5$), there is evidence that expanding insurance coverage and reducing the cost of

LARC for patients and clinics are positive determinants of LARC use. As noted earlier, 1 study looked at both healthcare services and health insurance status. Three studies examined the impact of the Affordable Care Act on LARC use. Notably, Nelson and colleagues³⁰ found that among privately insured women, wanting to switch methods if cost were not a factor was associated with new LARC uptake, although there was no awareness of no-cost IUD coverage. Pace et al.³¹ found that the Affordable Care Act has significantly decreased LARC cost-sharing, but had not yet increased the LARC initiation rate during its first year.

Two articles from 1 study examined homelessness in women Veterans using national Veteran's Administration data sets. The LARC uptake among homeless women Veterans, especially those from recent conflicts, was similar to that of the general population.³⁶ However, increasing drive distance was negatively correlated with LARC use for both housed and homeless Veterans, especially for Veterans residing >100 miles from a Veteran's Affairs Medical Center.³⁷ No studies that fit inclusion criteria on housing or homeless for non-Veterans were found, limiting our ability to analyze housing and LARC use in the general population or for other groups.

Two articles examined educational factors using data from the American College Health Association-National College Health Assessment II survey, both finding that LARC use significantly increased among college women in the studies' time frame (2008–2013³⁸ and 2011–2014³⁹) and both noting that less effective methods such as condoms and short-acting reversible contraceptives are used more frequently than LARC methods. Walsh-Buhi and colleagues³⁹ found that those attending 2-year schools had greater odds of reporting LARC use at last vaginal sex than those attending 4-year schools. They also found that women on campuses located in the

Midwest, South, and Western parts of the country had greater odds of LARC use (than women attending Northeast campuses), whereas Thompson et al.³⁵ did not examine campus location or 2- versus 4-year institutions.^{38,39} These analyses of LARC predictors and dual LARC/condom use have implications for health promotion and education. Findings suggest that college health services are well positioned to meet the sexual and reproductive health needs of diverse populations of students. College health professionals should elicit students' individual and/or relationship priorities to tailor messaging/services offered for pregnancy/sexually transmitted infection prevention.

One study examined the role of race-based discrimination in LARC use.²³ This study used data from a national telephone survey of women Veterans aged 18–44 years receiving Veteran's Administration health care who were also at risk of unintended pregnancy. Women who perceived race-based discrimination in their healthcare encounters were less likely to use any prescription contraception than women who did not (OR=0.65; 95% CI=0.42, 1.00), with the largest difference seen in rates of IUD or implant use (OR=0.40; 95% CI=0.20, 0.79). In the study sample of 1,341 women, 7.9% of racial and ethnic minority women perceived such discrimination. As with the housing studies in this review, the sample being limited to Veterans indicates the need for further empirical study in this area of social determinants and LARC use.

One study examined heteronormativity and LARC use.²² This study used survey data to categorize participants on the basis of self-report of sexual identity and sexual behavior in the survey arm of the HER Salt Lake Contraceptive Initiative. Among 3,901 survey respondents, 32% ($n=1,230$) identified with a sexual-minority identity, and 6% had had a female partner in the past 12 months. Bisexual and mostly heterosexual women selected an IUD or implant more frequently than exclusively heterosexual women while showing a preference for the copper T380 IUD. Exclusively heterosexual and lesbian women did not differ in their contraceptive method selection. Women with only female partners selected IUDs or implants less frequently than those with only male partners. The study concluded that more than 30% of the participants identified as a sexual minority, and many women who identify as bisexual or lesbian have a pregnancy risk owing to sexual behavior that includes having sex with men. The authors also note sexual minority women's increased odds of selecting the copper IUD to be of interest because it does not provide noncontraceptive benefits, which they hypothesized may be of interest to sexual minorities, especially lesbian-identified women.

Given previous commentaries on the impact of racism and ethnocentrism on LARC provision and use,⁸ records were examined for their operationalization of race and/or ethnicity. A total of 3 articles reported race and ethnicity as distinct demographic constructs. Thirteen articles reported race/ethnicity or race and ethnicity. A total of 6 articles reported race only. One study examined race/ethnicity/nativity. One study did not report these variables owing to the variables being unavailable in the health records data used in the study. [Appendix D](#) (available online) describes how each study reported assessment for race and/or ethnicity.

Geographically, $n=9$ studies were conducted exclusively in the urban settings. The remaining studies did not include sufficient information to assess urban versus rural or were conducted at the state or national level. Using the U.S. Bureau Economic Analysis delineation of regions,⁴⁶ variation was as follows: 5 studies used data from the Mideast, 3 studies used data from the Far West, 3 used data from New England, 3 used data from the Southeast, and 3 used data from the Rocky Mountain region. One study was conducted in the Great Lakes, the Plains, and one was conducted in the Southwest. The remaining studies were national in scope or used data from multiple regions (e.g., Planned Parenthood clinics across 15 states³⁵). [Appendix D](#) (available online) summarizes the geographic characteristics.

DISCUSSION

This systematic review raised several important considerations for future clinical practice and research on SDOH and LARC usage. First, most studies dealt with factors at the living and working conditions¹³ level of the SDOH framework. Within that level, healthcare services, health insurance, housing, and education were the specific categories of variables examined. As changes to each of these sets of factors emerge at local and national levels, future research must attend to how LARC use is impacted. For example, health insurance loss and changes to higher education owing to the coronavirus disease 2019 (COVID-19) pandemic may have resulted in disruption to LARC use for certain groups. Moreover, living and working conditions also include a range of other factors—Dahlgren and Whitehead's model also names unemployment, agriculture and food production, water and sanitation, and work environment but is not limited to these; future research must consider previously understudied social determinants at this level of the framework. In addition, clinical practice must consider how to incorporate discussion of and recommendations around social determinants into client-centered contraceptive counseling.¹⁵

A total of 3 studies examined factors (i.e., marital status, race) at the age, sex, and constitutional factors level.¹³ Two studies dealt with the general socioeconomic, environmental, and cultural level, examining heteronormativity and racial discrimination, respectively. This relatively small number of studies may have reflected the difficulty of conceptualizing or measuring dynamic socioeconomic, environmental, and cultural factors. Future qualitative or mixed-methods research on the impact of SDOH and LARC use may help to elucidate the complex variables within this level of the framework.¹¹ Likewise, there were relatively fewer quasi-experimental and RCTs in our review. Future quasi-experimental and RCTs may add to the evidence base for causal links between social factors and LARC use patterns.

Of particular importance, owing to the ongoing attention to racial and ethnic reproductive health inequities, we present our findings regarding the assessment of race and ethnicity. Our review shows that there is no consistent use of terms related to race and ethnicity in current research on SDOH and LARCs. Taken together, the current literature may fail to capture important distinctions in formative experiences across groups of LARC users. For example, interchangeably using African American and Black in reports of LARC usage when a study includes participants of the African diaspora who do not identify as African American may misrepresent significant linguistic and cultural differences, historical or generational traumas, or immigration statuses that all shape access to or preference for LARCs.⁴⁷ Allowing participants to identify as multiracial and biracial and, whenever practicable, use their own language may encourage a person-centered, more comprehensive research agenda on LARC use.

Although these are not entirely novel findings, several recent commentaries call for health care and associated research to develop a race-conscious framework and pay closer attention to word choice around race and ethnicity.^{47–49} As the authors note, precise and updated language fosters inclusivity and shows respect, which are critically important in fields (such as reproductive health) that are complicit in structural racism and stratified reproduction or the systematic valuing of some groups' fertility over others.^{50–54} Specific conventions will vary across disciplines. The American Medical Association (AMA) recommends including methods section on the source of classifications used (e.g., self-report, investigator observed, database, electronic health record, survey instrument), the reasons that these were assessed (including if the assessment is required by the funding agency), as well as reporting of race and ethnicity of the study population in the results section. Furthermore, the

AMA discourages the generic other as a convenience grouping or label (a convention noted in several studies in our review) unless it was a prespecified formal category in a database or research instrument.⁴⁹ The AMA recommends that the categories included in other groups should be defined and reported. Boyd and colleagues call for several key changes, including a consistent and explicit analysis of racism and not just the documenting of race and ethnicity in health policy and healthcare research.⁴⁸ Other disciplines engaging in contraception research (e.g., social work, demography) must look to these or their own scholarly guidelines to refine the reporting of race and ethnicity in a sensitive, equitable manner.

Gaps in the literature regarding regional representation were identified. No studies meeting inclusion criteria were conducted in key subregions of the Southern U.S., that is, the Gulf South (Florida, Alabama, Mississippi, Louisiana, Texas Gulf Coast). These areas are marked by stark maternal and reproductive health inequities,⁵⁵ including access to contraceptive services.^{56,57} The legacies of slavery, white supremacist policy, and racism in the subregion have a direct relationship with these inequities,⁵⁸ particularly for Black⁵⁹ and Indigenous women,⁶⁰ by curtailing access to resources and education over generations as well as exacerbating negative, discriminatory clinical encounters.^{7,61}

Finally, a conceptual and practice gap in the literature was noted because only 1 article specifically examines heteronormativity and LARC use (i.e., uptake). By examining how sexual identity and sexual behavior emerge in LARC use, Everett and colleagues highlight the need to support all those who can get pregnant in accessing quality contraception care.²² Findings that 1 in 3 women accessing family planning centers identified as a sexual minority support additional evidence that these participants are a common yet underappreciated presence in reproductive health settings.⁶² However, a broad grappling with sexuality's complexity was not present in the reviewed literature. Everett and colleague's categorization of sexual identity (i.e., exclusively heterosexual, mostly heterosexual, bisexual, or lesbian) and sexual behavior (i.e., only male partners, both male and female partners, only female partners, or no partners) could be expanded in future research to include more terms such as asexual or allowing research participants to use their own terms. As with language around race and ethnicity, using person-centered and updated categories connotes respect, more accurately documents inequities, and better reflects the sexual lives of those who use LARCs.⁶³ Finally, Everett and colleagues²² note that they did not analyze differences in use by gender identity (e.g., transgender, gender nonconforming) because of limited

sample size. Further research must continue to consider SDOH across the gender identity landscape to accurately support LARC use for, for example, trans, non-binary, and gender-nonconforming populations. A reproductive justice-informed research agenda will include and not be limited to a comprehensive understanding of contraceptive use patterns of queer people regardless of sexual or gender identities.⁶⁴

Although understanding regional, racial, ethnic, sexual identity, and gender gaps in LARC research is important for public health, readers should refrain from seeing LARC uptake as a goal in and of itself. As many scholars and activists have noted, true reproductive autonomy means that many people, regardless of the social determinants they experience, may still choose another method of contraception.^{8,65,66} Future research on SDOH and LARC use must consider elective LARC removal/switching (and social determinants thereof) as part of full access and patient centeredness.⁶⁷ Without comprehensive research on multilevel determinants, providers may miss opportunities to design meaningful public health and social-welfare strategies that distinguish between a genuine unmet need for LARC and promotion of LARC as a solution to problems that require social—not technologic—solutions.^{9,68}

LIMITATIONS

Many studies on LARC usage include those considered of reproductive age (15–45 years). Excluding studies with participants aged <18 years may miss research on LARC use and the SDOH in a significant proportion of young people who elect these contraceptive methods. Therefore, a potentially significant body of LARC and SDOH research is not represented in our analysis. However, contracepting adolescents in the U.S. are subject to specific regulations and institutional contexts (e.g., school-based health services) that warrant a separate analysis. Studies on postpartum, postabortion, and use of LARC as emergency contraception for similar reasons were omitted; because of the specific dynamics and settings related to contraceptive decision making immediately after delivery, abortion, or as emergency contraception, this segment of the literature warrants its own analysis. Relevant studies published in languages other than English may have been overlooked because this review exclusively included English-language publications. In addition, this review is limited because rural and urban designations refer to the location of the research setting and not the residence of the participant. It is possible that LARC users may live in an otherwise rural environment but access health care in an urban setting some distance away. Finally, because of the diversity

of methodologic approaches in the included studies, quantitative synthesis of the information on the relationships between SDOH and LARC use was not possible. However, the current review has value in examining which social determinants have been most frequently studied. Future reviews should aim to draw conclusions on the statistical association of relevant social determinants and LARC use.

Despite these limitations, to the best of our knowledge, this review produced the most comprehensive synthesis to date of research on the impact of SDOH on LARC use in the U.S. By selecting the publication cut off year of 2005, this analysis is situated in a key period of SDOH scholarship while maintaining breadth and depth in our review. Moreover, our analysis is conceptually grounded in the Dahlgren and Whitehead rainbow model, one of the most influential and widely cited versions of the SDOH framework.¹³ This is important because misunderstandings and misapplications of the SDOH framework have been identified by its original advocates.^{12,13}

CONCLUSIONS

In this systematic scoping review, a broad range of recent scholarship on SDOH and LARC use was synthesized. Healthcare services, health insurance, housing, and education were the most frequently researched categories of determinants. There was consistent reporting of the role of insurance coverage and reducing cost as a positive determinant of use. An important finding of this review is a lack of consistency in how race and ethnicity are conceptually defined and assessed in this body of research. There is a need for greater accuracy and inclusivity regarding race and ethnicity as well as methodologic justification as to how and why researchers use the categories they do. One article critically engaged with sexuality and its role in impacting LARC use. In addition, uneven geographic representation in the included articles suggests that certain regions or subregions marked by contraceptive access barriers (i.e., the Gulf South) are potentially understudied. The social determinants of LARC usage identified in this study can be used to understand gaps in current knowledge regarding who uses LARCs, what their experiences are, and how to meaningfully identify and eliminate barriers to usage (including removal or switching). Our review may also provide examples of how to conduct research on LARC use that considers factors above individual genetics, physiology, and behavior.

Given the Supreme Court's decision to overturn *Roe v. Wade* (resulting, at this writing, in total or near

total bans on abortion in almost half of the states), addressing the social factors that impact LARC use is critical for public health and medicine in several ways.⁶⁹ Being denied a wanted abortion is associated with anxiety and low self-esteem, decreased workforce participation, decreased financial security, decreased educational attainment, and decreased maternal bonding.^{70,71} Abortion restrictions are associated with increased maternal mortality.⁷² Moreover, in the absence of programs that promote public health and support parenting such as expanded child care, health care, and higher education, being forced to carry an unwanted or mistimed pregnancy to term may be particularly detrimental to the individual, family, and social wellbeing.^{73–75} To the degree that LARC use may prevent unwanted and mistimed pregnancies in the post-Roe landscape, research, policy, and programs to improve patient-centered LARC provision must be examined. Similar social determinants impacting abortion access have been shown to impact LARC use, and future research must examine these intersections. For example, nearly half of people who access abortion are below the Federal Poverty Line; Black and Latina people utilize abortion in higher proportions than other groups.⁷⁶ Although not a panacea against the negative impacts of abortion bans, LARC provision (informed by the principles of health equity and reproductive justice) may be part of an overall strategy to mitigate the harms of reproductive rights' curtailment. Going forward, high-quality and evidence-based intervention research on social determinants is needed to benefit all people who may use contraception, including LARC methods.

ACKNOWLEDGMENTS

The Meta-Analysis and Systematic Review Support program leadership did not have a role in the study design; collection, analysis, and interpretation of data; or writing of the manuscript; leadership did offer support for the decision to submit the report for publication.

MMBD and CP were supported by departmental funds from the Tulane University School of Social Work. SOC is a research analyst with the Tulane University Office of Academic Affairs and Provost. The Tulane University Meta-Analysis and Systematic Review Support Program provided administrative support and connection with a research librarian and SOC.

Declarations of interest: none.

CREDIT AUTHOR STATEMENT

Margaret Mary B. Downey: Conceptualization, Formal analysis, Investigation, Supervision, Visualization, Writing—original draft; Writing—review and editing. Catherine Poehling: Data curation, Formal analysis, Investigation, Writing—review and editing.

Samantha O'Connell: Data curation, Methodology, Project administration, Writing—review and editing.

SUPPLEMENTARY MATERIALS

Supplementary material associated with this article can be found in the online version at [doi:10.1016/j.focus.2022.100032](https://doi.org/10.1016/j.focus.2022.100032).

REFERENCES

1. Takeshita C. *The Global Biopolitics of the IUD: How Science Constructs Contraceptive Users and Women's Bodies*. Cambridge, MA: MIT Press, 2012. Accessed August 31, 2022.
2. Wu JP, Moniz MH, Ursu AN. Long-acting reversible contraception—highly efficacious, safe, and underutilized. *JAMA*. 2018;320(4):397–398. <https://doi.org/10.1001/jama.2018.8877>.
3. Thomas A, Karpilow QC. Long-acting reversible contraception: a silver bullet solution for unintended pregnancy? *Am J Public Health*. 2018;108(8):1007–1008. <https://doi.org/10.2105/AJPH.2018.304523>.
4. Finer LB, Zolna MR. Shifts in intended and unintended pregnancies in the United States, 2001–2008. *Am J Public Health*. 2014;104(suppl 1):S43–S48. <https://doi.org/10.2105/AJPH.2013.301416>.
5. Jones J, Mosher W, Daniels K. Current contraceptive use in the United States, 2006–2010, and changes in patterns of use since 1995. *Natl Health Stat Report*. 2012(60):1–25. PMID: 24988814. Accessed August 31, 2022.
6. Parks C, Peipert JF. Eliminating health disparities in unintended pregnancy with long-acting reversible contraception (LARC). *Am J Obstet Gynecol*. 2016;214(6):681–688. <https://doi.org/10.1016/j.ajog.2016.02.017>.
7. Gomez AM, Wapman M. Under (implicit) pressure: young Black and Latina women's perceptions of contraceptive care. *Contraception*. 2017;96(4):221–226. <https://doi.org/10.1016/j.contraception.2017.07.007>.
8. Gomez AM, Fuentes L, Allina A. Women or LARC first? Reproductive autonomy and the promotion of long-acting reversible contraceptive methods. *Perspect Sex Reprod Health*. 2014;46(3):171–175. <https://doi.org/10.1363/46e1614>.
9. Gubrium AC, Mann ES, Borrero S, et al. Realizing reproductive health equity needs more than long-acting reversible contraception (LARC). *Am J Public Health*. 2016;106(1):18–19. <https://doi.org/10.2105/AJPH.2015.302900>.
10. Zoorob D, McNamee C, Reilly M, Loss L, VanHook J. Impact of social determinants of health on the choice and use of long acting reversible contraceptives. *Adv Reprod Sci*. 2020;08(3):166–174. <https://doi.org/10.4236/arsci.2020.83014>.
11. Bonnefoy J, Morgan A, Kelly MP, Butt J, Bergman V. *Constructing the evidence base on the social determinants of health: a guide*. Geneva, Switzerland: World Health Organization; 2007. <http://hdl.handle.net/1903/22899> Accessed January 7, 2022.
12. Braveman P, Gottlieb L. The social determinants of health: it's time to consider the causes of the causes. *Public Health Rep*. 2014;129(1)(suppl 2):19–31. <https://doi.org/10.1177/00333549141291S206>.
13. Dahlgren G, Whitehead M. The Dahlgren-Whitehead model of health determinants: 30 years on and still chasing rainbows. *Public Health*. 2021;199:20–24. <https://doi.org/10.1016/j.puhe.2021.08.009>.
14. Steiner RJ, Pampati S, Kortsmid KM, Liddon N, Swartzendruber A, Pazol K. Long-acting reversible contraception, condom use, and sexually transmitted infections: a systematic review and meta-analysis. *Am J Prev Med*. 2021;61(5):750–760. <https://doi.org/10.1016/j.amepre.2021.04.032>.
15. Fox E, Reyna A, Malcolm NM, et al. Client preferences for contraceptive counseling: a systematic review. *Am J Prev Med*. 2018;55(5):691–702. <https://doi.org/10.1016/j.amepre.2018.06.006>.

16. Braveman P, Egerter S, Williams DR. The social determinants of health: coming of age. *Annu Rev Public Health*. 2011;32(1):381–398. <https://doi.org/10.1146/annurev-publhealth-031210-101218>.
17. Moola S, Munn Z, Tufanaru C, et al. Systematic reviews of etiology and risk. In: Aromataris E, Munn Z, eds. *JBIM Manual for Evidence Synthesis*; 2020. Chapter 7. <https://synthesismanual.jbi.global>. Accessed January 6, 2022.
18. Munn Z, Barker TH, Moola S, et al. Methodological quality of case series studies: an introduction to the JBI critical appraisal tool. *JBI Evid Synth*. 2020;18(10):2127–2133. <https://doi.org/10.11124/JBIS-RIR-D-19-00099>.
19. Marmot M, Allen JJ. Social determinants of health equity. *Am J Public Health*. 2014;104(suppl 4):S517–S519. <https://doi.org/10.2105/AJPH.2014.302200>.
20. Yudell M, Roberts D, DeSalle R, Tishkoff S, SCIENCE AND SOCIETY. Taking race out of human genetics. *Science*. 2016;351(6273):564–565. <https://doi.org/10.1126/science.aac4951>.
21. Dempsey AR, Billingsley CC, Savage AH, Korte JE. Predictors of long-acting reversible contraception use among unmarried young adults. *Am J Obstet Gynecol*. 2012;206(6). 526.e1–526.e5. <https://doi.org/10.1016/j.ajog.2012.02.014>.
22. Everett BG, Sanders JN, Myers K, Geist C, Turok DK. One in three: challenging heteronormative assumptions in family planning health centers. *Contraception*. 2018;98(4):270–274. <https://doi.org/10.1016/j.contraception.2018.06.007>.
23. MacDonald S, Hausmann LRM, Sileanu FE, Zhao X, Mor MK, Borrero S. Associations between perceived race-based discrimination and contraceptive use among women Veterans in the ECUUN study. *Med Care*. 2017;55(suppl 9 suppl 2):S43–S49. <https://doi.org/10.1097/MLR.0000000000000746>.
24. Groskaufmanis L, Masho SW. Source of care and variation in long-acting reversible contraception use. *Fertil Steril*. 2016;105(2):401–409. <https://doi.org/10.1016/j.fertnstert.2015.10.022>.
25. Boudreaux M, Xie L, Choi YS, Roby DH, Rendall MS. Changes to contraceptive method use at title X clinics following Delaware contraceptive access now, 2008–2017. *Am J Public Health*. 2020;110(8):1214–1220. <https://doi.org/10.2105/AJPH.2020.305666>.
26. Campbell SJ, Cropsy KL, Matthews CA. Intrauterine device use in a high-risk population: experience from an urban university clinic. *Am J Obstet Gynecol*. 2007;197(2). 193.e1–e6discussion 193.e6–e7. <https://doi.org/10.1016/j.ajog.2007.04.028>.
27. Sufirin C, Oxnard T, Goldenson J, Simonson K, Jackson A. Long-acting reversible contraceptives for incarcerated women: feasibility and safety of on-site provision. *Perspect Sex Reprod Health*. 2015;47(4):203–211. <https://doi.org/10.1363/47e5915>.
28. McNeely CA, Hutson S, Sturdivant TL, Jabson JM, Isabell BS. Expanding contraceptive access for women with substance use disorders: partnerships between public health departments and county jails. *J Public Health Manag Pract*. 2019;25(3):229–237. <https://doi.org/10.1097/PHH.0000000000000850>.
29. Ricciotti HA, Dodge LE, Ramirez CI, Barnes K, Hacker MR. Long-acting reversible contraceptive use in urban women from a title X–supported Boston Community Health Center. *J Prim Care Community Health*. 2015;6(2):111–115. <https://doi.org/10.1177/2150131914553800>.
30. Nelson HN, Thayer E, Bailey C, Leuenberger L, Lehman E, Chuang CH. Factors associated with new uptake of long-acting reversible contraceptives since the Affordable Care Act among privately insured women in Pennsylvania. *Women's Health Issues*. 2019;29(5):370–375. <https://doi.org/10.1016/j.whi.2019.06.004>.
31. Pace LE, Dusetzina SB, Keating NL. Early impact of the Affordable Care Act on uptake of long-acting reversible contraceptive methods. *Med Care*. 2016;54(9):811–817. <https://doi.org/10.1097/MLR.0000000000000551>.
32. Garipey AM, Simon EJ, DA Patel, Creinin MD, Schwarz EB. The impact of out-of-pocket expense on IUD utilization among women with private insurance. *Contraception*. 2011;84(6):e39–e42. <https://doi.org/10.1016/j.contraception.2011.07.002>.
33. Higgins TM, Dougherty AK, Badger GJ, Heil SH. Comparing long-acting reversible contraception insertion rates in women with Medicaid vs. private insurance in a clinic with a two-visit protocol. *Contraception*. 2018;97(1):76–78. <https://doi.org/10.1016/j.contraception.2017.08.016>.
34. Howard DL, Ford A, Ceballos S, Volker KW. Temporal trends in the uptake and continuation of the etonogestrel implant in a large private practice setting. *J Womens Health (Larchmt)*. 2018;27(2):191–195. <https://doi.org/10.1089/jwh.2017.6468>.
35. Thompson KMJ, Rocca CH, Kohn JE, et al. Public funding for contraception, provider training, and use of highly effective contraceptives: a cluster randomized trial. *Am J Public Health*. 2016;106(3):541–546. <https://doi.org/10.2105/AJPH.2015.303001>.
36. Gawron LM, Redd A, Suo Y, Pettey W, Turok DK, Gundlapalli AV. Long-acting reversible contraception among homeless women Veterans with chronic health conditions: a retrospective cohort study. *Med Care*. 2017;55(suppl 9 suppl 2):S111–S120. <https://doi.org/10.1097/MLR.0000000000000765>.
37. Gawron LM, Pettey WBP, Redd AM, Suo Y, Turok DK, Gundlapalli AV. Distance matters: geographic barriers to long acting reversible and permanent contraception for homeless women Veterans. *J Soc Distress Homeless*. 2019;28(2):139–148. <https://doi.org/10.1080/10530789.2019.1619242>.
38. Logan RG, Thompson EL, Vamos CA, Griner SB, Vázquez-Otero C, Daley EM. Is long-acting reversible contraceptive use increasing? Assessing trends among U.S. College Women, 2008–2013. *Matern Child Health J*. 2018;22(11):1639–1646. <https://doi.org/10.1007/s10995-018-2560-8>.
39. Walsh-Buhi ER, Helmy HL. Trends in long-acting reversible contraceptive (LARC) use, LARC use predictors, and dual-method use among a national sample of college women. *J Am Coll Health*. 2018;66(4):225–236. <https://doi.org/10.1080/07448481.2017.1399397>.
40. Higgins JA, Sanders JN, Palta M, Turok DK. Women's sexual function, satisfaction, and perceptions after starting long-acting reversible contraceptives. *Obstet Gynecol*. 2016;128(5):1143–1151. <https://doi.org/10.1097/AOG.0000000000001655>.
41. Sanders JN, Higgins JA, Adkins DE, Stoddard GJ, Gawron LM, Turok DK. The impact of sexual satisfaction, functioning, and perceived contraceptive effects on sex life on IUD and implant continuation at 1 year. *Women's Health Issues*. 2018;28(5):401–407. <https://doi.org/10.1016/j.whi.2018.06.003>.
42. Lin CJ, Maier J, Nwankwo C, et al. Awareness and use of contraceptive methods and perceptions of long-acting reversible contraception among White and non-white women. *J Womens Health (Larchmt)*. 2021;30(9):1313–1320. <https://doi.org/10.1089/jwh.2020.8642>.
43. Gilliam ML, Mistretta SQ, Martins SL, Holl JL. Impact of a revised appointment scheduling script on IUD service delivery in three Title X family planning clinics. *Contraception*. 2014;90(5):548–549. <https://doi.org/10.1016/j.contraception.2014.06.023>.
44. Raifman S, Barar R, Foster D. Effect of knowledge of self-removability of intrauterine contraceptives on uptake, continuation, and satisfaction. *Women's Health Issues*. 2018;28(1):68–74. <https://doi.org/10.1016/j.whi.2017.07.006>.
45. Evans ML, Breeze JL, Paulus JK, Meadows A. Revolving loan fund: a novel approach to increasing access to long-acting reversible contraception methods in community health centers. *J Public Health Manag Pract*. 2017;23(6):684–689. <https://doi.org/10.1097/PHH.0000000000000607>.
46. Statistical areas. Bureau of Economic Analysis, U.S. Department of Commerce. <https://apps.bea.gov/regional/docs/msalist.cfm?mlist=2>. Updated March 6, 2020. Accessed January 6, 2022.
47. Cerdeña JP, Plaisime MV, Tsai J. From race-based to race-conscious medicine: how anti-racist uprisings call us to act. *Lancet*. 2020;396(10257):1125–1128. [https://doi.org/10.1016/S0140-6736\(20\)32076-6](https://doi.org/10.1016/S0140-6736(20)32076-6).
48. Boyd RW, Lindo EG, Weeks LD, McLemore MR. On Racism: A New Standard for Publishing on Racial Health Inequities Lachelle D. *Weeks*

- Monica R. McLemore. *Health Affairs Forefront*. 2020. <https://doi.org/10.1377/hblog20200630.939347>.
49. Flanagan A, Frey T, Christiansen SL, Bauchner H. The reporting of race and ethnicity in medical and science journals: comments invited. *JAMA*. 2021;325(11):1049–1052. <https://doi.org/10.1001/jama.2021.2104>.
 50. Bridges KM. *Reproducing Race: An Ethnography of Pregnancy as a Site of Racialization*. University of California Press, 2011. Accessed August 31, 2022.
 51. Colen S. Like a mother to them: stratified reproduction and West Indian childcare workers and employers in New York. In: Ginsburg F, Rapp R, eds. *Conceiving the New World Order: The Global Politics of Reproduction*. Berkeley, CA: University of California Press; 1995:78–102. Accessed August 31, 2022.
 52. Harris LH, Wolfe T. Stratified reproduction, family planning care and the double edge of history. *Curr Opin Obstet Gynecol*. 2014;26(6):539–544. <https://doi.org/10.1097/GCO.0000000000000121>.
 53. Luna Z, justice Luker K. Reproductive. *Annu Rev Law Soc Sci*. 2013;9(1):327–352. <https://doi.org/10.1146/annurev-lawsocsci-102612-134037>.
 54. Kennedy AC. Eugenics, “degenerate girls,” and social workers during the progressive era. *Affilia*. 2008;23(1):22–37. <https://doi.org/10.1177/0886109907310473>.
 55. Artiga S, Damico A, Garfield R. *The impact of the coverage gap for adults in states not expanding Medicaid by race and ethnicity*. San Francisco, CA: Kaiser Family Foundation; 2015. <https://www.kff.org/racial-equity-and-health-policy/issue-brief/the-impact-of-the-coverage-gap-in-states-not-expanding-medicaid-by-race-and-ethnicity/>. Accessed January 6, 2022.
 56. Sutton MY, Anachebe NF, Lee R, Skanes H. Racial and ethnic disparities in reproductive health services and outcomes, 2020. *Obstet Gynecol*. 2021;137(2):225–233. <https://doi.org/10.1097/AOG.0000000000004224>.
 57. Sommers BD, Baicker K, Epstein AM. Mortality and access to care among adults after state Medicaid expansions. *N Engl J Med*. 2012;367(11):1025–1034. <https://doi.org/10.1056/NEJMsa1202099>.
 58. Roberts DE. *Killing the Black Body: Race, Reproduction, and the Meaning of Liberty*. 2nd Vintage Books Edition New York, NY: Vintage Books, 2017. Accessed August 31, 2022.
 59. Prather C, Fuller TR, Jeffries WL, et al. Racism, African American women, and their sexual and reproductive health: a review of historical and contemporary evidence and implications for health equity. *Health Equity*. 2018;2(1):249–259. <https://doi.org/10.1089/hec.2017.0045>.
 60. Liddell JL, Kington SG. “Something Was Attacking Them and Their Reproductive Organs”: environmental reproductive justice in an indigenous tribe in the United States Gulf Coast. *Int J Environ Res Public Health*. 2021;18(2):666. <https://doi.org/10.3390/ijerph18020666>.
 61. Thorburn S, Bogart LM. African American women and family planning services: perceptions of discrimination. *Women Health*. 2005;42(1):23–39. https://doi.org/10.1300/J013v42n01_02.
 62. Porsch L, Zhang H, Paschen-Wolff M, Grosskopf N, Grov C. Contraceptive use by women across multiple components of sexual orientation: findings from the 2011–2017 national survey of family growth. *LGBT Health*. 2020;7(6):321–331. <https://doi.org/10.1089/lgbt.2020.0013>.
 63. Streed CG, Grasso C, Reisner SL, Mayer KH. Sexual orientation and gender identity data collection: clinical and public health importance. *Am J Public Health*. 2020;110(7):991–993. <https://doi.org/10.2105/AJPH.2020.305722>.
 64. George MA. Queering reproductive justice. SSRN. In press. Online October 6, 2020. <https://ssrn.com/abstract=3517373>. Accessed January 7, 2022.
 65. Downey MM, Arteaga S, Villaseñor E, Gomez AM. More than a destination: contraceptive decision making as a journey. *Womens Health Issues*. 2017;27(5):539–545. <https://doi.org/10.1016/j.whi.2017.03.004>.
 66. Mann ES, White AL, Rogers PL, Gomez AM. Patients’ experiences with South Carolina’s immediate postpartum Long-acting reversible contraception Medicaid policy. *Contraception*. 2019;100(2):165–171. <https://doi.org/10.1016/j.contraception.2019.04.007>.
 67. Manzer JL, Bell AV. The limitations of patient-centered care: the case of early long-acting reversible contraception (LARC) removal. *Soc Sci Med*. 2022;292:114632. <https://doi.org/10.1016/j.socscimed.2021.114632>.
 68. Cappello O. *Powerful contraception, complicated programs: preventing coercive promotion of long-acting reversible contraceptives*. Washington, DC: Guttmacher Policy Review; 2021. https://www.guttmacher.org/sites/default/files/article_files/gpr2403621.pdf. Accessed January 6, 2022.
 69. The Dobbs v. Jackson Decision, Annotated. The New York Times. June 24, 2022. <https://www.nytimes.com/interactive/2022/06/24/us/politics/supreme-court-dobbs-jackson-analysis-roe-wade.html>. Accessed June 24, 2022.
 70. Upadhyay UD, Biggs MA, Foster DG. The effect of abortion on having and achieving aspirational one-year plans. *BMC Womens Health*. 2015;15(1):102. <https://doi.org/10.1186/s12905-015-0259-1>.
 71. Foster DG, Biggs MA, Raifman S, Gipson J, Kimport K, Rocca CH. Comparison of health, development, maternal bonding, and poverty among children born after denial of abortion vs after pregnancies subsequent to an abortion. *JAMA Pediatr*. 2018;172(11):1053–1060. <https://doi.org/10.1001/jamapediatrics.2018.1785>.
 72. Vilda D, Wallace ME, Daniel C, Evans MG, Stoecker C, Theall KP. State abortion policies and maternal death in the United States, 2015–2018. *Am J Public Health*. 2021;111(9):1696–1704. <https://doi.org/10.2105/AJPH.2021.306396>.
 73. Hussey LS. Welfare generosity, abortion access, and abortion rates: a comparison of state policy tools. *Soc Sci Q*. 2010;91(1):266–283. <https://doi.org/10.1111/j.1540-6237.2010.00692.x>.
 74. Zuniga C, Thompson TA, Blanchard K. Abortion as a catastrophic health expenditure in the United States. *Womens Health Issues*. 2020;30(6):416–425. <https://doi.org/10.1016/j.whi.2020.07.001>.
 75. WHO. Sustainable, *Monitoring health for the SDGs*. Geneva, Switzerland: WHO; 2020. www.who.int/sdg/targets/en/. Accessed June 25, 2022.
 76. Jerman J, Jones RK, Onda T. *Characteristics of U.S. abortion patients in 2014 and changes since 2008*. New York, NY: Guttmacher Institute; 2016. <https://www.guttmacher.org/report/characteristics-us-abortion-patients-2014>. Accessed January 6, 2022.