12-26-2023

Historic Redlining and Health Outcomes: A Systematic Review

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Recommended Citation

Kraus, N. T., Connor, S., Shoda, K., Moore, S. E., & Irani, E. (2023). Historic Redlining and Health Outcomes: A Systematic Review. Public Health Nursing, 1–10. https://doi.org/10.1111/phn.13276

Received: 31 May 2023 | Revised: 6 November 2023 | Accepted: 6 December 2023

DOI: 10.1111/phn.13276

PHN PUBLIC HEALTH NURSING WILEY

REVIEW SUMMARY

Historic redlining and health outcomes: A systematic review

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Abstract

Objective: The purpose of this systematic review was to synthesize the existing literature on the associations between historic redlining and modern-day health outcomes across the lifespan.

Method: This review searched PubMed and CINAHL for peer-reviewed, data-based articles examining the relationship between historic redlining and any health outcome. Articles were appraised using the JBI critical appraisal checklist. The results were synthesized using a narrative summary approach.

Results: Thirty-six articles were included and focused on various health outcomes, including cardiovascular outcomes, breast cancer incidence and mortality, firearm injury or death, birth-related outcomes, and asthma outcomes. Most of the included articles (n = 31; 86%) found significant associations between historic redlining and adverse health outcomes such as increased cardiovascular disease, higher rates of preterm births, increased cancer incidence, reduced survival time after breast cancer diagnosis, and increased firearm injury incidence.

Discussion: This review demonstrates the persistent effect of historic redlining on individuals' health. Public health nurses should recognize redlining as a form of structural racism when caring for affected communities and should advocate for policies and programs that advance health equity. Nurse researchers should develop and test multilevel interventions to address systemic racism and improve health outcomes in communities affected by redlining.

KEYWORDS
health, health equity, healthcare disparities, neighborhood characteristics, racism, systemic racism

1 | INTRODUCTION

Historic redlining refers to the system of discrimination against Black individuals that the federal government and banks used when providing housing loans in the 1930s and 1940s. In an effort to increase homeownership and support the economy after the great depression, the federal government created the Home Owners' Loan Corporation (HOLC) to determine levels of risk for housing loans, which was meant to encourage banks to give loans assisting middle-class families in homeownership. According to this system, neighborhoods were color coded into four categories: green, blue, yellow, and red. These four categories corresponded to a four-letter risk grading system ranging from A (best) to D (worst). HOLC appraisals explicitly cited the lack of Black individuals or immigrants as a reason for marking an area

green (or with a lower risk grade letter, such as Grade A), and cited high Black populations, even middle class, when marking areas red (or with a higher risk grade letter, such as Grade D; Rothstein, 2017). This system led to decades of loan practices that explicitly benefited White individuals and discriminated against Black individuals, causing significant financial disadvantage, and separating Black individuals into urban ghettos with significantly worse conditions and lower housing prices (Perzynski et al., 2022)

Redlining still has significant impacts on current-day socioeconomic outcomes and environmental outcomes. Socioeconomic effects of redlining include lower household income, decreased probability of being in the top quintile of household income distribution, and worse credit scores (Aaronson et al., 2021). According to B. Mitchell and Franco (2018), areas that received the historic lending bias of being redlined continue to experience higher levels of economic and racial segregation and overall lower income, compared to areas with better HOLC grades. Lower socioeconomic status and poverty can result in malnutrition and food insecurity. This in turn can impact potential for physical and intellectual development (Siddiqui et al., 2020). Lower socioeconomic status is also associated with decreased use of preventative healthcare, such as colonoscopies to screen for colorectal cancer, which can negatively impact health as diseases are discovered at later stages. Even with cost and insurance barriers removed, individuals of lower socioeconomic status are still less likely to get colonoscopies (Doubeni et al., 2012).

Additionally, Moxley and Fischer (2020) described the negative environmental impacts of redlining as decreased presence of greenspace and an increase in industrial waste sites and Interstate highways. When moving from zone A to zones B, C, and D, there is progressively less green space, forest cover, and open land, and progressively more developed urban land, brownfields, Superfund sites, and industrial sites. The increase of dangerous environmental sites in redlined areas poses a significant risk to health. For example, tree cover provides shade for protection from sun and heat, and provides carbon and water exchange with the environment, allowing for healthier air quality. In a recent study, Hwa Jung et al. (2022) reported that while New York City is overall improving levels of air pollution, the progress is smaller in redlined neighborhoods. This residual discrimination may have an effect on the health of individuals residing in areas with high levels of air pollutants (i.e., redlined neighborhoods).

There is an emerging body of literature focused on identifying the impact of redlining on current-day health. For instance, findings from recent studies suggest that redlining is associated with increased rates of strokes (Jadow et al., 2023) and a higher risk of death from breast cancer (Wright et al., 2022). Recent reviews reported on the associations between historic redlining and adverse health outcomes, but they covered articles published through March 2022 (Cross et al., 2023; Lee et al., 2022; Swope et al., 2022). Several papers addressing the topic have been published since the authors concluded their search for articles. Our systematic review is more expansive and covers the most recent literature about a rapidly growing area of research. Additionally, the published review papers are written from the perspective of public health and environmental health specialists. Our review is written from the perspective of nurses, highlighting implications for nursing research, practice, and policy. This is a particularly important perspective to provide for public health nurses seeking to make their practice more equitable and, in an effort, to promote antiracism in the nursing profession. Our review fills an important gap in the literature regarding the important role of nurses in responding to the injustice of redlining and its effects on health.

Health inequities and racism in healthcare are public health crises (CDC, 2021). Since the COVID-19 pandemic forced this reality into public awareness, addressing health inequities and racism has become a national priority. Nurses are particularly well-positioned to lead in this initiative, because of nurses' history of advocating for social justice and community health (National Academies of Science, Engineering, and Medicine, 2021) and requirements in the ANA's Nursing Code of ethics (Grant, 2020). To successfully dismantle systemic racism, we must first assess the health effects of redlining, a major contributor to health inequities, and identify targets for intervention. Therefore, in this systematic review, we aim to identify, appraise, and synthesize the existing literature on the persistent effects of historic redlining on health outcomes across the lifespan. We also provide recommendations about how nurses can address the persistent health effects of historic redlining.

2 | METHODS

2.1 | Design

This systematic review was structured based on the Preferred Reporting Items for Systematic Reviews and Meta–Analysis (PRISMA) guidelines.

2.2 | Eligibility criteria

To be included in this review, articles had to (1) be data-based and published in peer reviewed journals by July 2023; (2) include historic redlining as an independent variable; (3) include as a dependent variable a measurable health outcome, defined as: morbidity or mortality, or prevalence or incidence of a disease or injury; and (4) be written in English. We excluded (1) review or opinion articles; (2) articles focusing on "contemporary redlining," meaning acts of current segregation that are compared to historic redlining; and (3) articles that did not report the separate effects of historic redlining on health outcomes at the individual or neighborhood level (i.e., articles that focused on the intersection of historic redlining and contemporary segregation or housing discrimination).

2.3 | Databases and search strategy

A search of PubMed and CINAHL was conducted for articles including the terms redlining and health outcomes, or similar terms. The search

was entered in as: "(redlining or redlined) AND (health outcomes OR health disparities OR health status OR health inequality OR health inequity OR health OR illness OR injury OR morbidity OR mortality OR disease OR disease outcomes OR health consequences OR health impact)." An additional article was found by reviewing the references of relevant articles. We concluded our search in July 2023.

2.4 | Article selection and critical appraisal

After removing duplicates, three independent reviewers (NTK, SC, and KS) assessed the titles and abstracts, and the full text of the articles (when needed) to confirm eligibility. The reviewers consulted with the last author to address any areas of uncertainty and select the final articles included in this review.

Selected articles were evaluated by two reviewers (SC and KS) using the JBI critical appraisal checklist (Aromataris & Munn, 2020). JBI provides critical appraisal tools to assist in evaluating the quality, relevance, and results of published papers. We used the JBI checklist to address the following quality domains: sample inclusion criteria; participant and setting description; measurement of exposure, condition, and outcomes; strategies to deal with confounding factors; and appropriateness of statistical analyses. Disagreements were reviewed by two other reviewers (NTK and EI) and final decisions were agreed upon by all four.

2.5 | Data extraction and synthesis

The team developed a data extraction table using Microsoft Excel to identify data elements that are important to address the aim of this systematic review. Two reviewers (SC and KS) extracted data for the following elements: geographic location, sample size and brief sample description, time period of outcome assessment, health outcome(s), and main results about whether redlining was associated with the health outcome(s). Once data extraction was complete, we discussed patterns observed across the reviewed articles. We synthesized the results using a narrative summary approach (Popay et al., 2006).

3 | RESULTS

3.1 | Search results

The database search yielded 197 articles. After removing 54 duplicates, 143 articles were screened and a total of 108 articles were excluded because they did not meet eligibility criteria (see Figure 1). One additional article was found by reviewing references of other eligible and review articles. Ultimately, 36 articles were included in this review. For several articles that included both health outcomes and other outcomes, only the health outcomes were considered for this review. All the included articles were based on quantitative studies. Based on our methodological evaluation using the JBI critical appraisal tool, we did not identify major limitations and all included articles met the methodological quality criteria described in the tool.

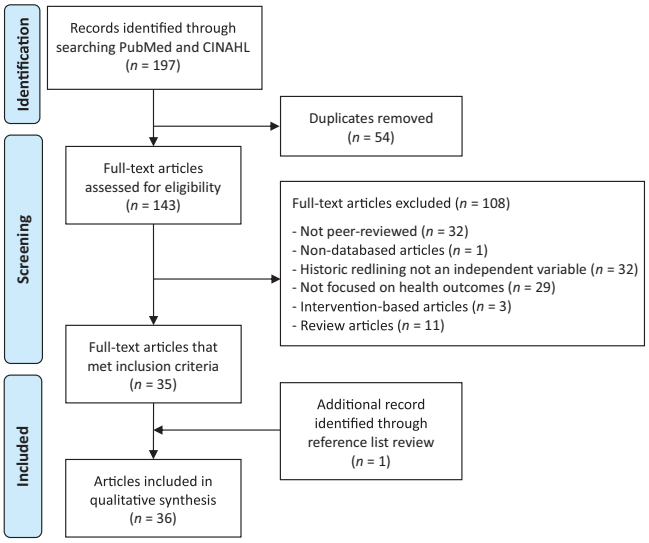

FIGURE 1 PRISMA Flow Diagram [Color figure can be viewed at wileyonlinelibrary.com]

3.2 | Sample characteristics of the included articles

Table 1 includes a summary of the study characteristics and outcomes. The samples of the included studies were either individuals or geographic areas (community statistical areas [CSAs] or census tracts). Of the studies investigating individuals, the sample sizes ranged from 250 to more than 38 million people. Most studies focused on specific cities or regions, while several looked at the entire United States. Most studies included several years of data, ranging from 3 months to 24 years.

3.3 | Health outcome measurement

Eight articles reported on studies investigated cardiovascular outcomes, which was the most measured outcome across all included articles. Four articles focused on cancer outcomes and four examined gunshot wounds. Other topics include infant mortality and birth outcomes, obesity, and asthma.

3.4 | Synthesized findings

Of the 36 included articles, 31 (86%) found a significant association between worse redlining scores (i.e., HOLC grade C or D) and adverse health outcomes. More specifically, living in a redlined neighborhood, compared to neighborhoods with better redlining scores (i.e., HOLC grade A or B), was associated with more severe asthma (Friedman et al., 2022; Nardone, Casey et al., 2020; Schuyler & Wenzel, 2022),

TABLE 1 Summary of the study characteristics and outcomes.

Article	Location	Sample size	Time[a]	Health outcome measured	Was redlining associated with worse outcomes?
Al-Kindi et al., 2023	Seven Cities in the U.S.	1,720 individuals diagnosed with chronic kidney disease	2003-2008	Cardiovascular disease prevalence and cardiovascular events incidence	Yes
Benns et al., 2020	Louisville, KY	1,307 gunshot victims	2012-2018	Gunshot wound incidence	Yes
Bikomeye et al., 2023	Throughout the U.S.	18,119 women with newly diagnosed breast cancer	2010-2017	Breast cancer mortality, length of survival after diagnosis, and treatment outcomes	Yes
Deo et al., 2023	Throughout the U.S.	79,997 veterans	2016-2019	Major adverse cardiovascular events incidence	Yes (particularly significant in non-White Americans)
Diaz et al., 2021	Throughout the U.S.	212,179 Medicare beneficiaries who underwent surgery	2012-2018	Post-operative outcomes after discharge (mortality, complications, readmissions)	Yes
Friedman et al., 2022	Kansas City, KS	10,736 patients between ages 3 and 19 with two or more asthma encounters	2017-2019	Number of asthma encounters and admissions per patient	Yes
Gao et al., 2022	California	2,020,194 births	1997-2017	Severe maternal morbidity prevalence	Yes (for Black and Hispanic participants)[b]
Hicks et al., 2023	Throughout the U.S.	11,668 census tracts	2011-2015	Visual impairment and blindness prevalence	Yes
Hollenbach et al., 2021	Finger Lakes region, NY	64,804 live births	2005-2018	Preterm and periviable birth rates	Yes
Huang & Sehgal, 2022	Baltimore, MD	54 community statistical areas	2013	Life expectancy and infant mortality rates; various other health outcomes	Yes
Jacoby et al., 2018	Philadelphia, PA	2,148 firearm injuries	2013-2014	Gunshot wound incidence	Yes
Jadow et al., 2023	New York City, NY	2,117 census tracts	2014-2018	Stroke prevalence	Yes
Kowalski et al., 2023	Denver, CO	250 children between ages 4 and 8	2009-2018	Childhood obesity prevalence	Yes
Krieger, Van Wye et al., 2020	New York City, NY	528,096 singleton births	2013-2017	Preterm birth rates	Yes
Krieger, Wright et al., 2020	Massachusetts	53,196 cases of primary invasive cancer diagnosed	2001-2015	Incidence of late-stage cancer at diagnosis	Yes (particularly significant for areas with current day economic privilege that were previously redlined)
Li & Yuan, 2022	New York City, NY	15,345 COVID-19 infections; 5,542 COVID-19 deaths	April-July 2020	Rates of COVID-19 infections and death	Yes (particularly significant for areas with current day economic privilege that were historically low graded)
D. Li et al., 2021	Texas	44,470 heat-related ED visits	2016-2019	Heat-related ED visit rates	Yes
Linde et al., 2022	Seattle, WA	109 census tracts	1990-2014	Years of Life Lost, mortality from diabetes, and all-cause mortality	Yes
Lynch et al., 2021	Milwaukee, WI	123 census tracts	2008-2019	Prevalence of poor physical or mental health and infant mortality	Yes
McClure et al., 2019	Detroit, MI	1,471 people residing in study area	2008-2013	Scores on self-rated health	Yes

(Continues)

TABLE 1 (Continued)

Article	Location	Sample size	Time[a]	Health outcome measured	Was redlining associated with worse outcomes?
Mehranbod et al., 2022	21 U.S. cities	576 ZIP codes	2019	Firearm violence and death rates	Yes (more significant in certain cities, such as Baltimore, MD)
Mentias et al., 2023	Throughout the U.S.	2,388,955 black or white medicare beneficiaries	2014-2019	Heart failure incidence rates	No (was significant for only Black Americans, but for White Americans had opposite effect)[c]
J. Mitchell & Chihaya, 2022	Throughout the U.S.	11,361 census tracts	2000-2020	Fatal police encounter rates	Yes
Motairek et al., 2022	Throughout the U.S.	38,537,798 people residing in study area	2019	Prevalence of various cardiometabolic outcomes	Yes
Mujahid et al., 2021	Throughout the U.S.	4,779 middle aged adults	2000-2002	Prevalence of various cardiovascular health outcomes	No (was only significant for Black Americans)
Nardone, Casey et al., 2020	California	1,431 census tracts	2011-2013	Rates of asthma-related ED visits	Yes
Nardone, Casey et al., 2020	California	651,260 births	2006-2015	Rates of preterm birth, perinatal mortality, low birth weight and small for gestational age births	Yes
Nguyen et al., 2023	Throughout the U.S.	11,723 census tracts	2012-2019	Kidney failure incidence rates	Yes
Plascak et al., 2022	New Jersey	14,964 women with breast cancer	2008-2017	Late stage at diagnosis, high tumor grade, tumor characteristics, and breast cancer–specific death	No (was only significant for non-Hispanic White women)
Sadler et al., 2022	Baltimore, MR	782 African American youth	2008-2010	Scores on self-rated anxiety and depression symptoms	No
Schuyler & Wenzel, 2022	Allegheny County, PA	1,034 people with asthma	2007-2020	Prevalence of uncontrolled and/or severe asthma and other asthma outcomes	Yes
Spitzer et al., 2023	Throughout the U.S.	191,356 firearm injuries	2014-2018	Firearm injury rates	Yes
Taylor et al., 2023	Throughout the U.S.	52,995 pedestrian fatality incidents	2010-2019	Pedestrian fatality rates	Yes
White et al., 2021	14 U.S. cities	Not reported	2011-2015	12 outcomes, including chronic heart disease, diabetes, and obesity prevalence	Yes
Wing et al., 2022	Columbus, OH	88 census tracts	Varies[d]	Stroke prevalence	Yes
Wright et al., 2022	Massachusetts	60,173 women diagnosed with breast cancer	2005-2015	Breast cancer incidence	No

Note. COVID-19 = Coronavirus Disease 2019; ED = Emergency Department.

[a]Time refers to the period of outcome assessment.

[b]This study focused on minority groups and examined racial or ethnic groups separately. There was no comparison to majority groups or to the total population.

[c]This study only examined racial groups separately, not the total sample. For Black Americans, they found that redlining was associated with increased rates of heart failure. For White Americans, they conversely found that redlining was associated with *decreased* rates of heart failure.

[d]This study used data from the CDC 500 cities project, 2020 release. Data for different variables were collected during different time frames. Overall, data ranged from 2010 to 2018.

increased preterm birth rates (Hollenbach et al., 2021; Krieger, Van Wye et al., 2020; Nardone, Casey et al., 2020), increased late-stage cancer diagnoses (Krieger, Wright et al., 2020), poorer breast cancer outcomes (Bikomeye et al., 2023), increased prevalence of cardiovascular disease or events (Al-Kindi et al., 2023; Deo et al., 2023; Jadow et al., 2023; Motairek et al., 2022; White et al., 2021; Wing et al., 2022), increased COVID-19 infection and death rates (Li & Yuan, 2022), poorer diabetes outcomes (Linde et al., 2022; White et al., 2021), increased gunshot wounds rates (Benns et al., 2020; Jacoby et al., 2018; Mehranbod et al., 2022; Spitzer et al., 2023), increased heat-related illness rates (Li et al., 2021), increased infant mortality (Huang & Sehgal, 2022; Lynch et al., 2021), increased kidney failure rates (Nguyen et al., 2023), more childhood obesity (Kowalski et al., 2023), increased pedestrian fatalities (Taylor et al., 2023), increase in fatal encounters with police (Mitchell & Chihaya, 2022), worse postoperative outcomes (Diaz et al., 2021), increased maternal mortality (Gao et al., 2022), overall worse self-rated physical health (Lynch et al., 2021; McClure et al., 2019), poorer mental health (Lynch et al., 2021), and increased prevalence of visual impairment and blindness (Hicks et al., 2023).

Of the 31 studies reporting significant associations, two described differential negative effects of redlining within specific population subgroups. The groups that had stronger associations between redlining and negative health outcomes were: non-White individuals (compared to White individuals; Deo et al., 2023) and Black and Hispanic individuals (compared to Asian/Pacific Islanders and American Indians/Alaskan Natives; Gao et al., 2022). Additionally, two studies found that areas that had worse redlining scores (such as grade C or D) but have current day economic and/or racial privilege had a stronger association between redlining and poor health outcomes (Krieger, Wright et al., 2020; Li & Yuan, 2022). Both articles however found that this did not hold true for the opposite. Areas that were scored better with redlining (such as HOLC grade A or B) and lacked current day economic and/or racial privilege did not have better health outcomes. For these areas, having better redlining scores did not protect against lack of current privilege. Mehranbod et al. (2022) found that the effects of redlining on health were more significant in some cities (such as Baltimore, MD) compared to other redlined cities.

Five articles reported a lack of significant associations between redlining and health outcomes in the full sample. In three of these articles, significant associations were found only when assessing associations within specific racial subgroups. For instance, redlining was associated with adverse health outcomes only among Black individuals (Mentias et al., 2023; Mujahid et al., 2021) and non-Hispanic White women (Plascak et al., 2022), but not in the overall sample.

4 | DISCUSSION

In this systematic review, we synthesized the literature about the relationship between redlining and health outcomes. We found that communities affected by redlining experience increased cardiovascular disease rates, increased preterm birth rates, increased cancer rates, increased frequency of gunshot wounds, and poorer asthma outcomes compared to living in a nonredlined neighborhood. Although 30 years after the practice began, redlining was banned by passage of The Fair Housing Act of 1968, its effects on health are still present today. Additionally, since the beginning of the COVID-19 pandemic, existing health inequities have been greatly exacerbated. Public health nurses are in an important strategic position to combat systemic racism and inequality and have a responsibility to address these injustices.

Several professional medical and nursing organizations have emphasized the nature of systemic racism as a public health threat and the importance of nurses acting against racism (Grant, 2020; O'Reilly, 2020). Addressing health inequities through multilevel interventions has been named as a priority in nursing and medicine in upcoming years, as included by the National Institute of Nursing Research as a key lens in their 2022–2026 Strategic Plan (USDHHS, 2022) and as the goal of the Future of Nursing 2020–2030 (NASEM, 2021). Therefore, it falls to public health nurses to spearhead the fight against racism and ensure that each person is provided with a fair and just opportunity to reach their full health potential.

Redlining is associated with adverse health outcomes for those living in redlined communities and those disparities impact certain population subgroups more than others. Three articles included in this review found stronger effects in Black individuals (Gao et al., 2022; Mentias et al., 2023; Mujahid et al, 2021), one found stronger effects specifically in Black women (Plascak et al., 2022), and one found stronger effects in Hispanic individuals (Gao et al., 2022). America's extensive history of systemic racism has made many tragedies worse for Black individuals, such as the impact of the Great Recession (Famighetti & Hamilton, 2019), opioid overdoses (Larochelle et al., 2021), and climate change (Kramar et al., 2018). The general injustice supported by redlining and its prolonged effects are critical to discuss, but equally important is acknowledging the disproportionate impacts that redlining has on minority populations, specifically Black and Hispanic individuals. Our knowledge of subgroups being more strongly affected by redlining should inform nursing practice to instill trust within those communities and prioritize the availability and utilization of adequate resources. Moreover, structural interventions aimed at addressing the effects of redlining should be prioritized for Black individuals and Hispanic individuals and tailored to these target populations.

While our review included papers about the associations between historic redlining and health outcomes, we also describe findings that current-day neighborhood characteristics as a contemporary form of structural racism may also play a role in the associations between historic redlining and adverse outcomes (Krieger, Wright et al., 2020; M. Li & Yuan, 2022). It is important to acknowledge that multiple forms of racism culminate to form the experience of modern-day racism. In a recent paper, Uzzi et al. (2022) examined the intersection of historic redlining and contemporary segregation, and their association on nonfatal shootings. Areas characterized by sustained disadvantage (i.e., historically redlined and have contemporary socioeconomic disadvantage) were reported to have the highest burden of nonfatal shootings. Future studies are needed to evaluate the intersections of different

forms of systemic racism in order to inform intervention tailoring. Interventions to address racism and its health effects need to consider an approach of intersectionality, both in terms of forms of racism and the different minority groups being affected by it.

Historically, nurses have been at the forefront of movements advocating for patients and equity, such as in the civil rights movement and the women's suffrage movement (Pollitt, 2016; Pollitt, 2018). With the current priority of antiracism, nurses, as the providers directly at the bedside and in the community, often see inequities firsthand, and are in a position to have immediate positive contributions. While racism has significant effects in acute and critical care settings, the public health setting is often where nurses can have the greatest positive impact on the course of affected individuals' lives and health. Through settings such as primary care, community outreach, and preventative screening services, we can actively promote trusting relationships with our communities to improve their health.

Future research is needed to develop, test, and implement interventions that address the negative effects of redlining. Many interventions were proposed in some of the included articles. There were financial interventions suggested such as reparations and research on the impact of reparations (Huang & Seghal, 2022; Lynch et al., 2021; McClure et al., 2019; Schuyler & Wenzel, 2022), increased investment in redlined neighborhoods (Huang & Sehgal, 2022; Kowalski et al., 2023; Mentias et al., 2023; Sadler et al., 2022; Spitzer et al., 2023), direct investments in communities of color (Diaz et al., 2021; Lynch et al., 2021), financial redistribution policies (Lynch et al., 2021), and loan preferences for redlined communities and/or minorities (Spitzer et al., 2023). Suggested interventions related to housing include the creation of more government fair housing acts (Krieger, Van Wye et al., 2020), expanding affordable housing in redlined communities (Mentias et al., 2023), rezoning (Friedman et al., 2022), and inclusionary zoning (Kowalski et al., 2023). Other intervention topics were environmental neighborhood improvements, including aesthetic and structural improvements to vacant properties (McClure et al., 2019), improving park and recreation infrastructure (Kowalski et al., 2023), increasing greenspace in these neighborhoods (Deo et al., 2023), and prioritizing these neighborhoods for electrification of industries to minimize pollution (Friedman et al., 2022). Various articles also suggested healthcare-focused interventions, including reform to the healthcare system such as reducing the cost of healthcare in historically-redlined communities or increasing insurance or Medicaid assistance (Diaz et al., 2021), creating more healthcare facilities in these communities (Mentias et al., 2023), implementing new health care models like mobile health units, decreasing access to nicotine, increasing access to healthy foods (Deo et al., 2023), and elimination of race-based spirometric normalizations (Schuyler & Wenzel, 2022). Nurses can collaborate with other professionals to evaluate the efficacy of such interventions and subsequently advocate for the implementation of successful programs among communities affected by redlining.

Several of the interventions mentioned above are also policy related. Nurses have a key advocacy role in policy making, including nurses in congress and public health departments. Nurses can communicate evidence-based policy interventions to state and federal government representatives through political advocacy and lobbying. Most public health nurses work in public health departments, where crucial decisions and policies are being made that could ultimately potentiate racism or fight against it. These nurses have the opportunity to advocate on behalf of communities affected by redlining and other forms of racism, to ensure that policies and programs advance health equity. These nurses can also help implement interventions developed by nurse scientists to address systemic racism and its health repercussions.

Nurses are in need of better training on the lingering health effects of redlining and other types of systemic racism. Nursing curricula should be developed and delivered through a health equity lens. While this topic is sometimes included in continuing education programs, it should be incorporated earlier, in nursing school, to better inform new nurses. The 2021 Essentials from AACN suggest the need to integrate equity, inclusion, and diversity into the content spanning the ten domains yet they include it in one competency–"9.6 Integrate diversity, equity, and inclusion as core to one's professional identity" (AACN Essentials, 2021, p. 51) and three subcompetencies (6.1d, 9.2d, 10.2f). The Essentials do however codify the need for professional nurses to recognize processes and structures that perpetuate racism and discrimination within healthcare (subcompetencies entry-level 7.3d, advance practice 7.3h)–yet again they fall short of providing the clear exemplars needed for how the integration of these important topics should be undertaken. The National League for Nursing has provided a range of resources and content to support faculty in addressing these key topics in their Taking Aim initiative (https://www.nlntakingaimdei.org/). The only very recent inclusion of these topics in the Essentials and other guiding documents is not really an answer to the issues identified here, yet they are simply an initial step for improving the preparedness of future nurses to identify and address racism. Nursing schools, nurses, and healthcare organizations have plenty of work left to do to ensure that everyone is represented in the face of healthcare.

One place to address some of this lack of representation is through the recruitment and admission of a more diverse cohort of nursing students and increasing representation with diverse nursing professors. The U.S. Supreme Court's 2023 decision in the *Students for Fair Admissions, Inc. v. Harvard University and the University of North Carolina* case has made consideration of race in admissions "invalidated" based on the 14th Amendment's equal protection clause. 41.1% of Americans are non-White (U.S. Census Bureau, 2022), but only 19.4% of registered nurses are non-White (Smiley et al., 2021)–this U.S. Supreme Court decision undermines nursing programs' ability to seek out more diverse student populations for their incoming classes which could have helped further diversify the nursing workforce. Increasing this diversity will help expose nursing students to broader perspectives, and the presence of diverse faculty will help nursing schools in creating curricula that better emulate antiracism. Schools should focus on creating curricula that incorporate antiracism into each class and specialty, educating students on the effects racism has in different areas of health and nursing. Additionally, schools should partner with local community health organizations that prioritize antiracism so that

students can have meaningful clinical experiences that actively promote antiracism.

In addition to their role in legal policies, nurses need to incorporate antiracism into their daily clinical practice. This can be achieved by using the Emancipator Nursing Praxis theory (Walter, 2017). This middle-range theory describes nurses' role as social justice allies through identifying and redressing societal injustices. This can be achieved through the use of four conceptual categories (becoming, awakening, engaging, and transforming) and two contextual categories (relational and reflexive). An important part of this theory is that becoming antiracist is a journey and a transformation. It does not happen instantaneously when a nurse decides they want to change their attitude and make the world more equitable. The steps of becoming, awakening, engaging and finally transforming guide nurses through the transition to antiracism. A key part of the awakening stage is understanding what came before, understanding the factors that are negatively affecting patients today. One component of this is the impact redlining has on individuals and communities today. By understanding and acknowledging that devastating impact, nurses can set the stage for the next step—engaging. In this step, nurses must actively take steps to make a difference.

This review has certain limitations that should be acknowledged when examining the findings. We used an exhaustive list of search terms to identify the list of potential articles to be included. However, it is possible that we may not have captured all published articles about the topic as terminology in these areas frequently evolve. Additionally, we used a narrative synthesis approach to describe our findings without the use of any meta-analytic approaches to quantify these concerning trends. Future updated reviews are needed to quantitatively synthesize the effect size of redlining's impact on various health outcomes.

5 | CONCLUSION

Living in a historically redlined neighborhood is associated with various adverse health outcomes, including increased cardiovascular disease prevalence, increased preterm birth rates, increased cancer incidence, increased frequency of gunshot wounds, and poor asthma outcomes. These effects are still harming Americans today. Future efforts should be focused on interventions to improve health outcomes, such as policy changes and community investment. Several professional nursing and medical organizations have named health equity as a current priority (Grant, 2020; National Academies of Science, Engineering, and Medicine, 2021; Redford, 2020; USDHHS, 2022) and research should continue to reflect this priority. Public health nurses are at an opportune position to have a positive impact on this situation, through research, clinical practice, and advocacy.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study. Data extracted from the included papers are presented in Table 1.

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How to cite this article: Kraus, N. T., Connor, S., Shoda, K., Moore, S. E., & Irani, E. (2023). Historic Redlining and Health Outcomes: A Systematic Review. *Public Health Nursing*, 1–10. https://doi.org/10.1111/phn.13276