RESEARCH

The Impact of Social Determinants of Health on Breast Cancer Surgery Treatment Choice: A Scoping Review

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ABSTRACT

This scoping review sought to examine existing studies that have identified social determinants of health associated with differences in receipt of breast conserving surgery (lumpectomy with radiation) vs. mastectomy (with or without reconstruction) in individuals diagnosed with breast cancer to determine areas of future research and inform local quality improvement efforts. The health sciences librarian developed the search strategy by using keywords and subject headings for four concepts: breast cancer, Hispanic and Black populations, specific breast cancer treatments (breast conserving treatments or total mastectomy), and health disparities or socioeconomic factors. Two databases, PubMed (NLM) and Web of Science (Clarivate), were searched during the month of August 2022. There were 2105 unique results, which were uploaded into Rayaan for screening. 46 studies were identified for full review and 20 were included in data extraction and qualitative analysis. Eighteen social determinants of health (SDOH) were found to be associated with treatment disparities. Rural residence, lower socio-economic status, education beyond high school, marital status, white race, treatment at county hospital (v. private), and high self-reported family-influence on treatment decisions were associated with mastectomy. Surgery by a breast surgeon (v. general surgeon), Medicare enrollment, Spanish-language predominance, and higher BMI were associated with breast conserving surgery treatment (BCS). Not all findings were consistently associated with BCS or mastectomy. This reflects a need for further qualitative and quantitative studies to better characterize the intersection of these factors with patient preferences in the formulation of treatment decisions to reduce existing disparities and properly counsel patients.

KEYWORDS: Social Determinants of Health, Breast Cancer, Breast Surgery, Health Disparities

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Background

Disparities in breast cancer mortality have been well documented. Black women, although statistically less likely than White women to be diagnosed with breast cancer, are approximately 42% more likely to die from the disease (Yedjou et al., 2019). Similarly, Latinx women have an elevated breast-cancer specific mortality rate despite being 30% less likely to be diagnosed with breast cancer (Serrano-Gomez et al., 2020). Researchers have often attributed differences in breast cancer incidence to genetic predispositions and higher rates of risk factors in women of color (Yedjou et al., 2019). Mortality differences have often been attributed to later detection and more aggressive tumors, as women of color have historically had less access to screening tools (Yedjou et al., 2019). Several studies, however, have demonstrated that accounting for mammography, stage of tumor at diagnosis, and comorbidities does not completely eliminate the observed gaps in breast cancer-related mortality (Curtis et al., 2008). Thus, further investigation into other contributing factors is warranted.

Although there is substantial data on racial disparities in breast cancer outcomes, there is limited research investigating disparities in breast cancer treatment. In particular, available reviews from the last two decades have not fully addressed reasons behind treatment differences amongst Black and Latinx patients as compared to White patients. Given that insurance policies, socioeconomic landscapes, treatment options and guidelines have evolved during this time, detailed investigation into the current patterns of disparity is necessary. Additionally, our emerging understanding of race as a social construct and the impact of social determinants of health (SDOH) on incidence and outcomes of different conditions compels us to re-examine factors that may be contributing to breast cancer disparities. Without understanding these possible disparities, we will be unable to actively engage in policies to correct them and will continue to contribute to the systems that produce poor health outcomes for women of color with breast cancer.

Among the spectrum of treatment options available for breast cancer management is surgical management. The two predominant options are a mastectomy (removal of all breast tissue) versus breast conserving surgery (removal of cancerous tissue with a small portion of surrounding normal breast tissue followed with radiation surgery). Breast conserving surgery (BCS) is also commonly referred to as a lumpectomy or partial mastectomy. BCS has certain absolute contraindications including a diagnosis of inflammatory breast cancer, multicentric disease with two or more primary tumors located in separate quadrants, diffuse malignant microcalcifications on mammography, persistently positive resection margins despite multiple resection efforts, or contraindications to radiation (ex. radiation to currently affected area, pregnancy, amongst others) (Jordan & Oxenberg, 2022). In addition to these absolute contraindications, tumor size, risk of a second breast cancer (ex. strong family history, known breast cancer gene mutation, etc), and individual needs and preferences should be accounted for while deciding between a mastectomy and BCS. For those with localized breast cancer, research shows that mastectomy and BCS lead to comparable survival outcomes (Early Breast Cancer Trialists' Collaborative Group, 1996)

This review was written to catalog the existing research on treatment disparity with a specific focus on disparities in surgical treatment. It primarily assesses data on differences in the treatment decision of breast conserving surgery vs. mastectomy with or without reconstruction for Black, Latinx, and White patients. The decision to

have breast conserving surgery v. mastectomy should be made based on clinical indications and patient preference; however, some of our local patients are covered by a medical access plan that does not include radiation treatment, which may sway treatment patterns of some patients away from breast conserving surgery. Such a realization led to a desire to investigate if similar insurance differences or other social determinants of health may be influencing treatment decisions in the broader population. The World Health Organization defines social determinants of health as the non-medical factors that influence health outcomes, including but not limited to income and social protection, housing, and social inclusion and non-discrimination (World Health Organization, Accessed 2023). In the context of this review, we utilized their framework to identify relevant non-medical factors that were noted to influence treatment in the existing literature. We hypothesized there may be differences related to type of insurance, race, and ethnicity and sought to examine the existing literature covering these factors. This review seeks to illuminate possible patterns in treatment decision-making, particularly in situations in which patient preference is challenged, and call attention to the need for further qualitative research into non-pathological factors associated with Black and Latinx patients' treatment decisions.

Methods

The methods used in this review follow the currently expected standards for rapid scoping reviews (MDJ, et al., 2021). The research team consisted of four medical students, the health sciences librarian, and the Principal Investigator. The health sciences librarian developed the search strategy by using keywords and subject headings for four concepts: breast cancer, Hispanic and Black populations, specific breast cancer treatments (breast conserving treatments or total mastectomy), and health disparities or socioeconomic factors. The team provided the librarian with 14 articles for search validation purposes. After validation was completed and the search was adjusted to incorporate missed terms, two databases, PubMed (NLM) and Web of Science (Clarivate), were searched during the month of August 2022. No limitations were placed on the results sets except for the restriction of English language only.

There were a total of 3074 results. The Health Sciences Librarian exported results into and deduplicated within the EndNote software tool (https://endnote.com/). After deduplication, there were 2105 unique results. These results were uploaded into the screening tool Rayyan (https://www.rayyan.ai/). The title/abstract screening process was undertaken by teams of two reviewers, with a third reviewer designated to resolve conflicts. Inclusion criteria: US studies on breast cancer using data from after the year 2000 that studied differences in breast cancer surgical treatment (BCS v. mastectomy +/- reconstruction) associated with any social determinant of health in Black and/or Latina populations. Exclusion criteria are listed in Table I. Articles with more than one exclusion criteria were labeled with the highest priority reason represented by the lowest number in the table; for example, an article that used data from < 2000 and was also not treatment focused would be labeled "< 2000" (Table 1).

Table 1. Exclusion Criteria and Tags.

1.	<2000
2.	Not a US study

3. Not breast cancer focused
4. Wrong population
5. Reconstruction Only
6. Not correct treatment focus (includes: survival focused, gene therapies/radiation/chemo)
7. Screening/prevention focused
8. Survival Focused
9. Wrong outcome (delays, adherence)
10. Not tx comparative (only addressing BCS or only addressing mastectomy)
11. Not disparity focused
12. Intervention focused (protocols, no actual patient numeric or thematic data)
13. Not peer reviewed
14. Not published

46 papers advanced to the full text screening phase which was also conducted with teams of two reviewers, with a third reviewer for conflicts. 20 papers were chosen for the final analysis and data extraction (Figure I). Manual searches of reference lists of relevant articles were conducted to source potential studies not included in original database search results. Data was manually extracted by two reviewers and cross-checked for accuracy by a third reviewer. Extracted data is listed in Table 2. Included studies are listed in Table 3.

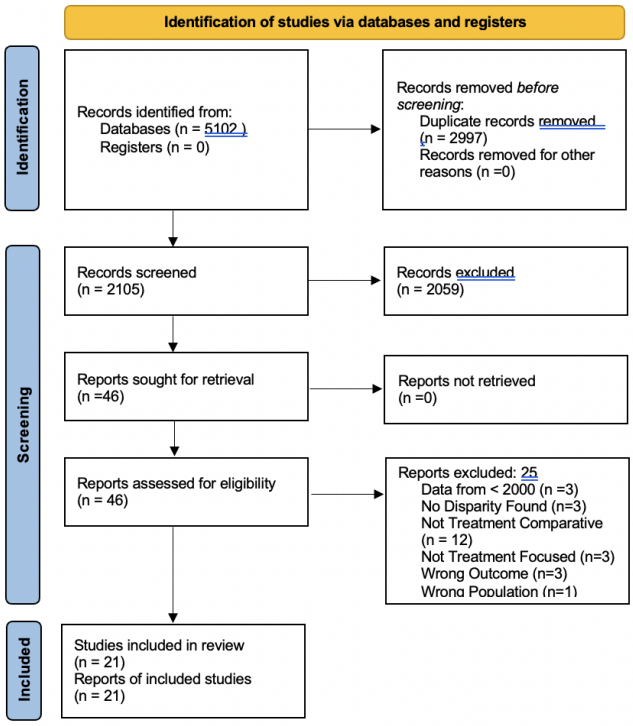


Figure I. PRISMA Flow Diagram of Study Inclusion.

Table 2. Data Extracted from Included Studies.
Data Extracted
Date Reviewed by Team
Author
Title
Type of Publication
Aim of Original Study
Study Design
Participant Ages
Participant Race & Ethnicity
Participant Socioeconomic Status
Type of hospital
Non-Pathological Factors Related to Differences in Treatment
Themes Identified

Table 3. Included Articles.

Citation	Study Type	Sample Size	Themes Identified
Advani, P., Bondy, M., Thompson, P. A., Martínez, M. E., Nodora, J. N., Vernon, S. W., Diamond, P., Burnett, J., & Brewster, A. M. (2018). Impact of acculturation on breast cancer treatment and survivorship care among Mexican American patients in Texas. Journal of cancer survivorship : research and practice, 12(5), 659–668. https://doi.org/10.1007/s11764-018-0703-y	Retrospective	343	Age, Education, Primary Language
Akinyemiju, T. F., Vin-Raviv, N., Chavez-Yenter, D., Zhao, X., & Budhwani, H. (2015). Race/ethnicity and socio-economic differences in breast cancer surgery outcomes. Cancer epidemiology, 39(5), 745–751. https://doi.org/10.1016/j.canep.2015.07.010	Retrospective	71,156	Race, Rural, Type of Insurance
Akinyemiju, T., Sakhuja, S., & Vin-Raviv, N. (2016). Racial and socio-economic disparities in breast cancer hospitalization outcomes by insurance status. Cancer epidemiology, 43, 63–69. https://doi.org/10.1016/j.canep.2016.06.011	Retrospective	67,084	Race, Rural
Bakalov, V., Jayakrishnan, T. T., Abel, S., Hilton, C., Rusia, B., & Wegner, R. E. (2021). The use of adjuvant radiation therapy in male breast cancer and its impact on outcomes. Cancer treatment and research communications, 27, 100359. https://doi.org/10.1016/j.ctarc.2021.100359	Retrospective	6217	Age, Type of Insurance
Campesino, M., Koithan, M., Ruiz, E., Glover, J. U., Juarez, G., Choi, M., & Krouse, R. S. (2012). Surgical treatment differences among Latina and African American breast cancer survivors. Oncology nursing forum, 39(4), E324–E331. https://doi.org/10.1188/12.ONF.E324-E331	Mixed Methods with Interviews	39	Primary Language
Churilla, T. M., Egleston, B., Bleicher, R., Dong, Y., Meyer, J., & Anderson, P. (2017). Disparities in the Local Management of Breast Cancer in the US according to Health Insurance Status. The breast journal, 23(2), 169–176. https://doi.org/10.1111/tbj.12705	Cross-Sectional Survey	129,565	Insurance Status
Dehal, A., Abbas, A., & Johna, S. (2013). Racial disparities in clinical presentation, surgical treatment and in-hospital outcomes of women with breast cancer: analysis of nationwide inpatient sample database. Breast cancer research and treatment, 139(2), 561–569. https://doi.org/10.1007/s10549-013-2567-1	Retrospective	75,100	Race
Fayanju, O. M., Yenokyan, K., Ren, Y., Goldstein, B. A., Stashko, I., Power, S., Thornton, M. J., Marcom, P. K., & Hwang, E. S. (2019). The effect of treatment on patient-reported distress after breast cancer diagnosis. Cancer, 125(17), 3040–3049. https://doi.org/10.1002/cncr.32174	Mixed Methods (Retrospective Chart Review & Prospective Study)	1029	Age, Race, Marital Status

Lehrberg, A., Sebai, M., Finn, D., Lee, D., Karabon, P., Kiran, S., & Dekhne, N. (2021). Trends, survival outcomes, and predictors of nonadherence to mastectomy guidelines for nonmetastatic inflammatory breast cancer. The breast journal, 27(10), 753–760. https://doi.org/10.1111/tbj.14283	Retrospective	10,610	Age, Type of Insurance, Education, Rural, Race
Maly, R.C., Umezawa, Y., Ratliff, C.T. and Leake, B. (2006), Racial/ethnic group differences in treatment decision-making and treatment received among older breast carcinoma patients. Cancer, 106: 957-965. https://doi.org/10.1002/cncr.21680	Cross-sectional Survey	257	Family Influence
McClintock, Ayabe, R. I., Salas Parra, R. D., Kaji, A. H., Orozco, J. I. J., Marzese, D. M., Samuels, E., Stern, S. L., Dauphine, C., & Ozao-Choy, J. J. (2022). A Microcosm of Disparities in Breast Cancer: Comparison Between a Private Hospital and a Safety-Net County Hospital Within Los Angeles County. The American Surgeon, 88(7), 1653–1656. https://doi.org/10.1177/0003134821998668	Retrospective Cohort	754	Race, Ethnicity, Type of Hospital
Nahleh, Z., Otoukesh, S., Mirshahidi, H. R., Nguyen, A. L., Nagaraj, G., Botrus, G., Badri, N., Diab, N., Alvarado, A., Sanchez, L. A., & Dwivedi, A. K. (2018). Disparities in breast cancer: a multi-institutional comparative analysis focusing on American Hispanics. Cancer medicine, 7(6), 2710–2717. https://doi.org/10.1002/cam4.1509	Retrospective	3441	Race
Nguyen, B. C., Alawadi, Z. M., Roife, D., Kao, L. S., Ko, T. C., & Wray, C. J. (2016). Do Socioeconomic Factors and Race Determine the Likelihood of Breast-Conserving Surgery?. Clinical breast cancer, 16(4), e93–e97. https://doi.org/10.1016/j.clbc.2016.05.008	Retrospective	3,937	Socioeconomic Status
Olsen-Deeter, L., Hsu, C. H., Nodora, J. N., Bouton, M. E., Nalagan, J., Martinez, M. E., & Komenaka, I. K. (2014). Factors which affect use of breast conservation and mastectomy in an underinsured Hispanic population. *Surgical oncology*, *23*(4), 186–191. https://doi.org/10.1016/j.suronc.2014.09.001	Retrospective Review	219	Primary language, BMI, Type of Surgeon
Oppong, B. A., Bhattacharyya, O., Li, Y., Obeng-Gyasi, S., & Sheppard, V. B. (2022). Receipt of breast conservation over mastectomy in Black women- does breast cancer subtype matter?. Journal of the National Medical Association, 114(3), 298–307. https://doi.org/10.1016/j.jnma.2022.02.007	Retrospective	390,279	Race
Shiyanbola, O. O., Sprague, B. L., Hampton, J. M., Dittus, K., James, T. A., Herschorn, S., Gangnon, R. E., Weaver, D. L., & Trentham-Dietz, A. (2016). Emerging trends in surgical and adjuvant radiation therapies among women diagnosed with	Retrospective	416,232	Age, Ethnicity

ductal carcinoma in situ. Cancer, 122(18), 2810–2818. https://doi.org/10.1002/cncr.30105			
Stahl, K. A., Dodge, D., Olecki, E. J., Holguin, R. P., McLaughlin, C., Wong, W., & Shen, C. (2022). Insurance Status and Travel Distance to Single Treatment Facility Predictive of Mastectomy. The Journal of surgical research, 270, 22–30. https://doi.org/10.1016/j.jss.2021.08.035	Retrospective	284,202	Age, Rural Residence, Insurance Type
White, A., Richardson, L. C., Krontiras, H., & Pisu, M. (2014). Socioeconomic disparities in breast cancer treatment among older women. Journal of women's health (2002), 23(4), 335–341. https://doi.org/10.1089/jwh.2013.4460	Retrospective	2,097	Socioeconomic status
Winton, Nodora, J. N., Martinez, M. E., Hsu, C.-H., Djenic, B., Bouton, M. E., Aristizabal, P., Ferguson, E. M., Weiss, B. D., & Komenaka, I. K. (2016). Factors associated with surgical management in an underinsured, safety net population. Surgery, 159(2), 580–590. https://doi.org/10.1016/j.surg.2015.08.016	Retrospective	403	Ethnicity, Type of Surgeon, Marital Status
Yang, R. L., & Wapnir, I. (2018). Hispanic Breast Cancer Patients Travel Further for Equitable Surgical Care at a Comprehensive Cancer Center. Health equity, 2(1), 109–116. https://doi.org/10.1089/heq.2017.0021	Retrospective Single Institution	1852	Age

Thematic analysis was employed to identify themes and directions of association in the qualitative data extracted from the included studies. This approach allowed for the systematic identification and interpretation of patterns across the literature. The analysis involved several steps:

1. Familiarization with the data: The reviewers read and re-read the extracted data to gain a comprehensive understanding of the content.
2. Generating initial codes: The reviewers independently generated initial codes, which involved labeling or categorizing segments of the data that represented meaningful concepts or ideas.
3. Searching for themes: The reviewers conducted a thematic analysis by iteratively organizing the codes into potential themes. Similar codes were grouped together, and the reviewers discussed and refined the themes through consensus.
4. Reviewing and defining themes: The reviewers reviewed and refined the identified themes by examining their content and ensuring they accurately represented the data. Themes were defined and named to reflect the underlying concepts.
5. Grouping: The reviewers organized the themes into a coherent framework and explored relationships and patterns between themes.
6. Directions of Associations: After identification of themes, articles were analyzed for the association of the included themes with either BCS or mastectomy.

Quality Assessment

Given the scoping nature of this review, a formal quality assessment of the included studies was not conducted. Instead, the focus was on

comprehensively mapping the literature and identifying themes and qualitative directions of association.

Results

21 studies were included for data extraction. 18 factors were identified as having statistically significant relationships to the type of treatment received in the originally published studies and were organized by theme (Table 4). Race was the most frequently cited factor, followed by insurance status, and Hispanic ethnicity (Figure II). In all included studies that measured these factors, rural residence, lower socio-economic status, higher education, marital status, white race, treatment at county hospital (v. private), and high self-reported family-influence on treatment decision were associated with mastectomy. Surgery by a breast surgeon (v. general surgeon), Medicare enrollment, Spanish-predominance, and higher BMI were associated with breast conserving surgery treatment. The other themes were not consistently associated with one treatment type or the other. Some factors, like Black race, were associated with BCS in the majority of studies (7), but found to be associated with mastectomy in two of the studies as well. Hispanic ethnicity, being uninsured, and having private insurance each had equal numbers of studies in which they were found to be associated with BCS and mastectomy, yielding a net neutral direction of association for these themes in this review. The complexity of these relationships and associations are reflected in Figure III, in which the size of the bubble represents the strength of the association with the dominant treatment type.

Table 4. Factors and Themes Identified in Included Studies.

Themes	Factors Identified
Demographic Factors	• Age • Marital status • Education • Socioeconomic Status • Race • Hispanic Ethnicity • Primary language • Insurance Status
Surgical Factors	• Type of Surgeon • Type of Hospital
Geographic Factors	• Rural residence
Lifestyle Factors	• BMI
Social Factors	• Family influence

Figure II. Percentage of Included Studies That Identified a Relationship to Treatment Type.

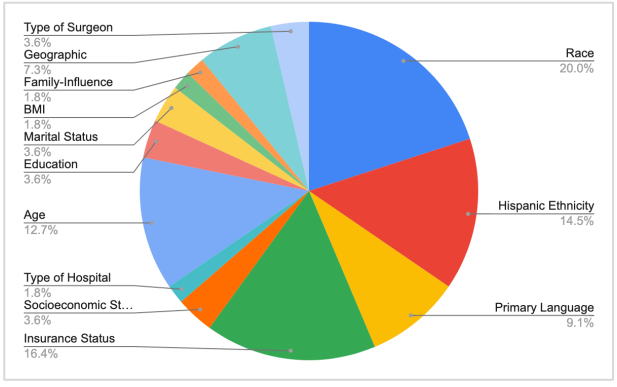
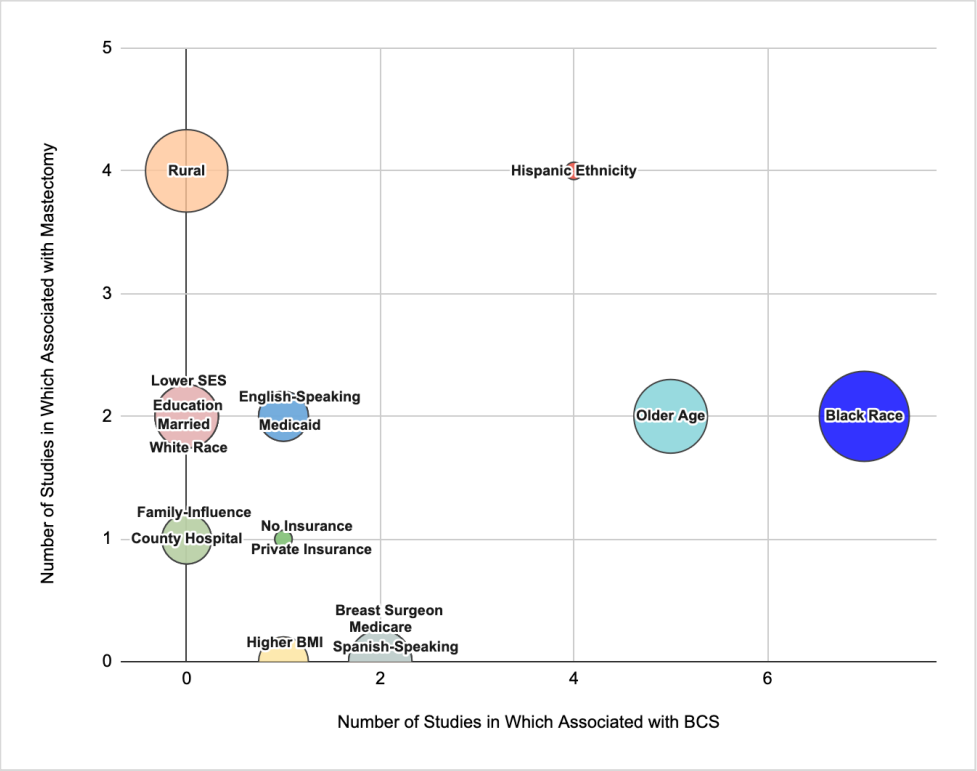


Figure III. Frequency of Each SDOH Theme's Direct Association with Breast Conserving Surgery and Mastectomy.



Within the included studies, higher proportion of those published after 2018 were more likely to report an association between minority populations (Black race and/or Hispanic ethnicity) and mastectomy treatment, whereas studies the majority of papers published prior to 2018 recorded an association of Black race and/or Hispanic ethnicity with breast conserving surgery. In the studies that focused only on Hispanic populations, primary language, age, type of surgeon, BMI, and education had an association with treatment type. None of the included studies looked exclusively at Black patients.

Discussion

While there is comparable survival outcome for both mastectomy and BCS among patients with localized tumors, some evidence suggests that non-White patients are less likely to receive breast conserving surgery and are more likely to receive mastectomy (Dunmore et al., 2000; Shavers & Brown, 2002). This disparity matters because it may indicate that there may be underlying factors driving the treatment decision in non-White populations that need to be explicitly explored. These differences in treatment type have been attributed to various factors such as later stage at diagnosis in non-White patients, differences in insurance coverage, and other pathologic and nonpathological factors (Shavers & Brown, 2002; Banerjee et al., 2007). There has not, however, been a comprehensive review investigating which non-pathologic factors may be driving disparities in receipt of BCS v. mastectomy. Notably, in a study conducted in an equal-access military hospital, no such racial disparity in treatment type was found - equivalent percentages of White, Black and LatinX women received mastectomy and BCS (Lovejoy et al., 2019). This supports the hypothesis that perhaps differences in insurance drive some racial patterns in treatment; however, such an influence has not been sufficiently studied and was not consistently demonstrated in the studies included in this review,

perhaps because of other confounding factors besides insurance access.

Race

While the literature suggests that, overall, mastectomy may be the treatment more associated with Black and Latinx populations, the included studies in this review had inconsistent thematic direction.

Black race was overall more associated with BCS; while White race was associated with mastectomy. However, in two of the included studies, Black race was found to be associated with mastectomy.

Interestingly, Hispanic ethnicity was found to have a net neutral direction of influence, which was unexpected based on previous literature. The inconsistent direction of association for Hispanic ethnicity and Black race likely represents the effect of confounding factors. Not all studies included in this review corrected for the same factors when investigating the relationship between race and ethnicity and treatment type, thus potentially contributing to the variety of conclusions drawn in the studies.

Additional Demographic Factors

Lower socioeconomic status, education beyond high school, and marital status were associated with mastectomy in all of the included studies that investigated these factors. This suggests that these demographic factors may influence the preference for mastectomy over BCS. Other demographic factors including age, insurance type (Medicare enrollment), race, Hispanic ethnicity, and primary language, were associated with both BCS and mastectomy in the included studies, but the direction of association varied among studies and was likely influenced by confounding factors. For example, older age was generally associated with BCS, but in two studies, it was associated with mastectomy. Similarly, insurance coverage (Medicaid vs. other insurance types) was inconsistently associated with mastectomy. These findings highlight the need for further exploration of these factors and their interactions with race/ethnicity in future studies.

Geographic Factors

Rural residence was consistently associated with mastectomy in all of the included studies that investigated this factor. This suggests that rural populations may have limited access to breast conserving surgery and are more likely to undergo mastectomy due to distance from radiation facilities or travel difficulties.

Lifestyle Factors

Higher BMI was associated with breast conserving surgery (BCS) in the included studies. This may indicate that patients with higher BMI may be more likely to choose BCS over mastectomy, or it may represent surgeon preference for less invasive surgery in patients with higher BMIs due to, among other possibilities, concern for prolonged time under anesthesia, healing difficulties, or infection risk.

Social Factors

The opinions of support persons, particularly family and spousal influence, were found to play a role in treatment decisions. Married women and women with self-reported high levels of family involvement in decision making were more likely to choose mastectomy. This suggests that family dynamics and approval may impact the decision-making process and treatment choice.

Surgical Factors

Surgery by a breast surgeon (vs. general surgeon) was associated with breast conserving surgery (BCS). This indicates that the type of surgeon involved in the treatment decision may impact the

choice of surgical procedure and that potentially breast specialists are more comfortable with BCS operations than their general surgeon counterparts. In contrast, surgical treatment at a county hospital (v. private) was associated with mastectomy. It is possible that there may be a confounding affect observed as county hospitals may be less likely than private ones to have breast specialists, but this should be explored more in future studies.

Interaction Between Factors

Information about potential confounding factors that may have influenced the findings on the relationship between race and ethnicity and treatment type may be found by looking at these themes. For example, if lower-socioeconomic status was more prevalent in the Black or Hispanic populations studied in a given data set, it may have skewed the association of race/ethnicity to BCS towards mastectomy in that study, as lower socio-economic status was found to be independently associated with mastectomy in another study (Nguyen et al., 2016). Similarly, although older age was generally associated with BCS in the included studies, it was associated with mastectomy in two of the studies. Given that Black women are known to be diagnosed with breast cancer at earlier ages than White women, and therefore the older patients may be more likely to be non-hispanic Whites, it is possible that the association of White race with mastectomy influenced the relationship between older age and treatment type (Akinyemiju et al., 2015). The association between race and ethnicity and breast surgery treatment type should therefore be explored independently from and in conjunction with other possible factors such as health literacy in future studies.

Confounding factors may have also influenced the findings of the relationship between age or insurance type and treatment type. Older age is more likely to be directly associated with medicare coverage, which is associated with BCS, potentially strengthening the association of older age and BCS (Akenyemiju et al., 2015; Lehrberg et al, 2021). Similarly, medicaid coverage is associated with lower socioeconomic status, which may have contributed to the weak, inconsistent association of medicaid beneficiaries with mastectomy (Churilla et al., 2017; Akinyemiju et al., 2015)

There are additional non-pathological patient differences that may contribute to the decision between mastectomy and BCS that were not sufficiently examined in the studies included in this review. Particularly, mastectomy may be more likely in groups that view recurrence as more likely with BCS and/or those who prioritize reducing recurrence risk as the most important outcomes (Hawley et al., 2009). Additionally, women with barriers to daily radiation treatments such as childcare responsibilities, may likewise receive mastectomy, regardless of underlying preference, due to scheduling concerns. This gap, when further explored for nuance, can be addressed in part by clear and thorough patient education regarding the guidelines demonstrating similar recurrence risks with both surgical options.

The opinions of the support persons of Black and Latinx women were examined in this review, with several studies addressed family and spousal impact on decision-making. Married women and women with self-reported high levels of family involvement in decision making were more likely to choose mastectomy in the reviewed studies (Fayanju et al., 2019; Winton et al., 2016; Maly et al., 2006). Additional literature reviews highlight that the role of family and spousal approval may be an important lens with which to analyze our results, as it can illuminate the possible reasons for the shift toward mastectomy in certain groups. In particular, one qualitative survey study that was excluded from our overall review found that an increase in patient

involvement in decision-making increased the likelihood of receipt of mastectomy in all racial and ethnic groups (Hawley et al., 2009). Thus, further research should consider investigating the impact of fear of recurrence and family-level health literacy and understanding of treatment risks and benefits on treatment type.

Lastly, the disparities discussion would not be complete without addressing access to reconstruction, which certainly affects decision making and would potentially have a disparate impact on Black and Latinx populations. While insurance coverage as an independent variable should be explored in further studies, the topic of reconstruction is very complex and warrants its own review regarding treatment disparity and the factors that contribute to it.

Overall, the findings of this review highlight important areas for future research and opportunities for more targeted patient counseling. The relationship between race and ethnicity and treatment type needs to be explored with consistent control for social factors and in conjunction with explorations of personal preference and reasonings. In regards to patient counseling, rural populations need to be screened for access concerns that may be leading to preferential choice of mastectomy rather than BCS.

Limitations

This scoping review had several limitations, including those pertaining to the nature of the review itself. The search strategy was limited to two databases and only included articles that used data from after 2000, due to the changes in treatment guidelines and increasing understanding of social determinants since that time. Some studies or reviews that fit the other search criteria and investigated the relationship between social determinants of health and breast cancer treatment were excluded because they did not compare BCS directly to mastectomy, instead grouping 'surgical' treatment together. As well, this review was qualitative and approached with thematic analysis which is inherently subject to reviewer bias. While reviewer bias was mitigated with blind initial-review and third-person conflict resolving, some may still persist.

This review addresses this gap in the literature by identifying the key themes and factors at play in the breast cancer surgical treatment disparity as well as addressing thematic nuances. Of the many social factors investigated in the included studies, health literacy was not explicitly explored. While 'health literacy' is a subjective measure and thus potentially difficult to study, it can also be viewed as a risk factor for poor health outcomes, and would be a valuable subject for future studies (Stormacq et al., 2019). Additionally, the factors at play contributing to treatment decisions are recorded only when the decisions happen, not accounting for patient refusal of surgery for various reasons (Fwelo et al., 2022). Lastly, while male BC patients were not excluded from this review, the included studies did not significantly address disparities in male populations and this group warrants further consideration.

Conclusions

Not all findings were consistently associated with BCS or mastectomy, reflecting a need for further qualitative and quantitative studies to better characterize the intersection of social factors with patient preferences in the formulation of treatment decisions. Future studies should investigate these social determinants of health more rigorously, and should also include explorations of the role of availability in reconstruction in comparisons of rates of breast conserving surgery and mastectomy in Black and Latinx populations. Without intentional and methodical exploration of the factors that affect

treatment decisions in these populations, it is likely that treatment and outcome disparities will persist.

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Conflicts of interest

The authors report no conflicts of interest.

Authors' contributions

Study Concept & Design: B.U., L.S., I.V., K.B.

Acquisition, Analysis & Interpretation of data: B.U., L.S., S.R., I.V., M.F.

Writing of the Manuscript: B.U., L.S., S.R.

Study Supervision: K.B.

Objective

To examine the existing literature addressing socioeconomic and cultural factors that influence the breast cancer treatment disparities in Black and Latinx populations, with particular focus on the receipt of breast-conserving surgery versus mastectomy.

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