Community collaboration to improve access and outcomes in breast cancer reconstruction: protocol for a mixed-methods qualitative research study

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ABSTRACT
Introduction Breast reconstruction plays an important role for many in restoring form and function of the breast after mastectomy. However, rates of breast reconstruction in the USA vary significantly by race, ethnicity and socioeconomic status. The lower rates of breast reconstruction in non-white women and in women of lower socioeconomic status may reflect a complex interplay between patient and physician factors and access to care. It remains unknown what community-specific barriers may be impacting receipt of breast reconstruction.

Methods and analysis This is a mixed-methods study combining qualitative patient interview data with quantitative practice patterns to develop an actionable plan to address disparities in breast reconstruction in the local community. The primary aims are to (1) capture barriers to breast reconstruction for patients in the local community, (2) quantitatively evaluate practice patterns at the host institution and (3) identify issues and prioritise interventions for change using community-based engagement.

Ethics and dissemination Ethics approval was obtained at the investigators’ institution. Results from both the qualitative and quantitative portions of the study will be circulated via peer-review publication. These findings will also serve as pilot data for extramural funding to implement and evaluate these proposed solutions.

INTRODUCTION
Breast cancer is the second most common cancer in women, with over 330,000 women diagnosed in the USA per year.1 2 After diagnoses of breast cancer, women must navigate the physical, emotional and financial impacts of undergoing cancer treatment. Cancer treatments, including chemotherapy, mastectomy and radiation, are influenced by tumour stage and patient preferences, and thus are highly variable and complex decisions.3 4 There are many women who elect not to pursue breast reconstruction for a variety of reasons. However, breast reconstruction continues to play an important role for many patients in restoring form and function following surgical resection of the breast.

In patients who elect to undergo breast reconstruction, the improvement in quality of life for many is substantial.5–7 As access to reconstructive breast care has increased in the USA, the rate of breast reconstruction following mastectomy has dramatically increased over the past 20 years.8 9 However, despite increasing overall rates of reconstruction, rates of breast reconstruction vary in different patient populations and due to different institutional structures.10 11 However, nationally in the USA, lower rates persist among minority patients and those of lower socioeconomic status.12 13 Similarly, the differences in rates of breast reconstruction by race and ethnicity at the investigators’ institution and within the state of study are also significant. At the investigators’ institution, after mastectomy, 33% of White women undergo breast reconstruction, compared with 16% of black and 15% of Hispanic women.14 This is in comparison to equal rates among White and Hispanic women in other settings with adequate resources for

STRENGTHS AND LIMITATIONS OF THIS STUDY
⇒ Study design and implementation is grounded in the needs of the community through community-based collaboration.
⇒ This study captures the experiences of black or African American women who are considering breast reconstruction.
⇒ The interview guide was designed to be comprehensive of factors surrounding breast reconstruction to best elucidate where barriers may arise.
⇒ This is a single-institution study, and findings may be generalised only to the study community.
⇒ Given the qualitative nature of the study, the findings may be biased by possible participant selection bias.
traditionally underserved populations, suggesting opportunities for improvement.15 16

The lower overall rates of breast reconstruction in non-white women and in women of lower socioeconomic status reflect complex interplay between patient and physician factors and access to care (Preliminary Conceptual Framework, figure 1). Pursuit of breast reconstruction is elective and has shown to be influenced by social and cultural norms, body image and identity, factors which may in turn be impacted by race and ethnicity.17 18 Furthermore, rates of reconstruction and patient satisfaction with surgical decision making is influenced by social and cultural history that may be outside of the control of an individual physician. This includes the presence of historical mistreatment and inadequate medical care, as well as perceived physician biases and racism.18 However, research to date exploring the barriers to reconstruction including the influence of race and ethnicity on receipt of breast reconstruction has focused on women from primarily northern USA and urban environments.17 19 20 The impact of race and ethnicity on rates of breast reconstruction in non-northern suburban, and rural areas is not well understood. Therefore, while significant disparities exist at the investigators’ institution, it is unclear what factors are responsible for this finding.

The primary aims of this study are to (1) analyse barriers to breast reconstruction for patients in our local community, (2) quantitatively evaluate practice patterns at the host institution and (3) identify issues and prioritise interventions for change using community-based engagement. By identifying specific and actionable racial health disparities in breast reconstruction to intervene on, we hope to improve the care of underserved patients in our community. Next steps will include the translation of any local success of this intervention to the national level. To achieve this goal, our team proposes a multipart, community-based collaborative approach (figure 2). Our hope is to ensure that all patients served by our health system who are interested in pursuing breast reconstruction are able to do so in an environment with sufficient education and preoperative counselling, in a process that is free of implicit bias.

**METHODS AND ANALYSIS**

This is a mixed-methods study combining qualitative patient interview data with quantitative practice patterns to develop an actionable plan to address disparities in breast reconstruction. The study enrolment period is targeted to run from March 2022 to March 2023 (figure 3).

**AIM 1:** Capture barriers to breast reconstruction for patients in the local community. Purposeful sampling will be used to recruit a diverse sample of black or African American women who have undergone mastectomy for breast cancer, with consideration for diversity in socioeconomic status and receipt of breast reconstruction in Durham, NC. Eligibility criteria will include women age 18 years or older, who speak English or Spanish, and are able to consent and conduct an in-person, video or telephone interview. Eligible patients will have had a mastectomy for breast cancer, and either considered or pursued breast reconstruction surgery. Patients will
be recruited through the breast oncology and plastic surgery clinics at Duke University, the statewide Duke Cancer Network, as well as through our community partners. In addition, patients identified in the quantitative review in aim 2 will be potential patients for recruitment.

**Figure 2** Study schematic.

**Figure 3** Interview guide.
Semistructured qualitative interviews, in English or Spanish, will be conducted to understand patient experiences, including barriers and issues faced while considering and pursuing breast reconstruction. An interpretive description approach will be used, combining theoretical knowledge from the literature with clinical knowledge from the research team to form a basis for the identification of key concepts and issues for the patient group.\(^{21,22}\) The interview guide is shown in online supplemental file 1. In patients who do not pursue reconstruction, the reasons behind this decision will be captured during the interview. Interviews will be conducted until content saturation is reached, that is, no new issues and barriers are identified.\(^{23}\) Of note, establishing the point of content saturation has inherent subjectivity, as it is likely that with continued interviews, new issues and barriers would inevitably be revealed. However, content saturation will be reached when continued interviews add only marginal change to the overall conceptual framework of barriers faced by patients. We budgeted for 35 interviews, to ensure we had adequate funding to capture relevant barriers faced by women of varying race, ethnicity, class, geographical status and other socioeconomic factors, in addition to barriers influenced by medical or surgical complications. It is estimated that interviews will last approximately 30–90 min in length. Participants will be adequately reimbursed for their time and travel with a participation stipend.

Qualitative interviews will be recorded and transcribed. Inductive qualitative data analysis will be performed to identify common themes and issues, and to refine the preliminary conceptual framework (figure 1). Each interview will be coded line by line to identify common issues and themes. These will be categorised top down in domains, themes and then subthemes. Interviews will be coded by clinical team members (BS, MN, SMW and LRM) and qualitative methods expert (LJF) to ensure consistency, reliability and validity in coding. Coding discrepancies requiring additional expertise will be brought up with the senior clinical team members (STH, OMF and RAG). Statements describing multiple concepts and/or themes will be coded multiple times to adequately capture each unique concept/theme. Each concept/theme will only be coded once per subject, independent of how many times a subject repeats the same concept/theme. The refined conceptual framework and qualitative data will be used to create a preliminary set of interventions and priorities for change.

AIM 2: Quantitative evaluation of practice patterns at primary institution. Preliminary data demonstrates significant disparity in breast reconstruction rates at the primary institution,\(^{14}\) however, it is unclear what factors contribute to this discrepancy. We will perform a retrospective review of all breast cancer patients treated in the Duke Health System from 2018 until the present. Descriptive analysis will be used to understand current practice patterns, including current demographics of the breast cancer and breast reconstruction populations, racial and ethnic differences in rates and utilisation of plastic surgery referrals, offered reconstruction, completed reconstruction, and reconstruction type and complications. In addition to race and ethnicity, we will evaluate the influence of insurance status, medical comorbidities, cancer stage and oncological treatment. Following the descriptive analysis, a multivariable analysis will be used to identify racial, ethnic, and socioeconomic factors associated with rate of referral and/or receipt of breast reconstruction.

AIM 3: Determine issues and barriers, prioritise and workshop interventions for change using community-based engagement. Integrating the qualitative and quantitative data collected in the first two aims, the preliminary conceptual model will be revised. Using both the qualitative and qualitative data, a preliminary prioritisation of issues and potential interventions and solutions will be developed. We hypothesise that these community-based and system-based solutions will be multifaceted and include interventions to improve education, counseling, communication, community outreach and physician cultural bias training. A series of two to three focus groups with patients and community partners will be conducted to workshop the preliminary prioritisation of issues and potential solutions. The focus groups will be conducted by a member of the research team, with a second member of the team taking notes on participant perspectives and ideas. After each session, the issues and solutions will be revised, with the revised set of issues and solutions being presented to the next group. In between the revisions, the results of the focus group will be discussed with members of the healthcare team to evaluate for feasibility and possible implementation issues. The focus groups will continue until there are no significant changes to the proposed list of issues and initial solutions. It is estimated that this will take two to three focus groups. The goal will be for there to be 5–10 patients and/or community members at each focus group. This process will ensure our targeted interventions are grounded in the needs of the community we strive to serve. Extramural funding will be sought to implement and evaluate the proposed solutions for change.

In addition to the study aims, the data and analysis generated from this project will facilitate an evaluation of the internal processes at our institution from the perspective of the breast oncology and reconstructive plastic surgeons. Patient data generated will help our multidisciplinary surgical team evaluate our current multidisciplinary practices, role of shared decision-making in clinical encounters, level of informed consent and early versus delayed reconstruction among others.

**Patient and public involvement**

The study was designed in partnership with multiple community partners that represent both patient and community interests and needs.
ETHICS AND DISSEMINATION

Institutional review board (IRB) approval was obtained at Duke University, Durham, NC. This is a low-risk study. For aims 1 and 3, the risks are related to privacy of personal health information as well as the emotional impact of undergoing qualitative interviews. For aim 2, the risk is related to privacy of personal health information. To mitigate this risk for aims 1 and 3, patients will be offered support and mental healthcare if needed, as a result of the psychological impact of the interviews. For aims 1 and 3, patients are consented by a member of the study team via telephone. The consent process ensures that all efforts are made to maintain confidentiality. Patients are informed that personal information will be shared with members of the research team as necessary for analysis, collaboration, funding purposes and study regulation.

Patients are informed that if they choose not to participate, then there will be no changes to their routine medical care.

All data collected will be stored and transferred using secure, IRB approved storage locations and transfer methods. Audio of the interviews will be transcribed by a Health Insurance Portability and Accountability Act (HIPPA) compliant, IRB approved transcription service that generates deidentified transcripts of the interviews.

The results of the qualitative and quantitative analyses, as well as finalised conceptual framework, priorities for change and workshopped proposed solutions will be circulated via peer-review publication (figure 3). In addition, findings will be circulated to our community partners using lay summaries. These findings will also serve as pilot data for extramural funding to implement and evaluate these proposed solutions.

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