Implications of Mobility Impairment on the Diagnosis and Treatment of Breast Cancer

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Abstract

Background: Among women with chronic, preexisting mobility impairments, we sought to explore how their mobility difficulties affected the diagnosis and treatment of early-stage breast cancer

Methods: This is a qualitative analysis of transcripts from in-depth in-person or telephone interviews with 20 English-speaking women who had early-stage breast cancer, were <60 years of age, and had chronic difficulty walking or used wheeled mobility aids at the time of their breast cancer diagnoses

Results: Nine women were disabled by polio as children or had postpolio syndrome, 3 had cerebral palsy, 3 had spinal cord injury, and 5 had other conditions. Most women reported difficulty obtaining mammograms, primarily because of inaccessible equipment, positioning problems, and difficulties with uncontrollable movements. Many women made decisions about surgical approach and chemotherapy by explicitly considering how various therapies would affect their arms, which are essential to their mobility (they use ambulation aids, self-propel manual wheelchairs, or otherwise rely on their arms for mobility or safety). Managing at home after surgery posed major mobility challenges, especially for women who lived alone. Several women reported feeling they suffered more chemotherapy side effects than do women without mobility problems. Weight gains with endocrine therapy compromised the mobility of several women.

Conclusions: Increasing numbers of American women are living with mobility disabilities and entering age ranges with increased risks of breast cancer. Mobility impairments can affect women at every point during early-stage breast cancer diagnosis, therapy, and recovery. Clinicians must consider women's mobility functioning in making therapeutic recommendations to women with impaired mobility who develop breast cancer.

Introduction

GROWING NUMBERS OF AMERICANS live with disabilities, and this prevalence will rise with aging baby boomers.¹ Adult women have significantly higher disability rates than men (24.4% vs. 19.1%),² including walking difficulties. In coming years, therefore, many women newly diagnosed with early-stage breast cancer will likely also have mobility impairments.

Relatively little is known about the experiences of women with disabilities who develop breast cancer.^{3–5} Women with disabilities have lower rates of screening mammography than other women.^{6–11} A study using nationwide cancer registry data found that compared with other women, women with disabilities (defined by receipt of Social Security Disability Insurance) are more likely to undergo mastectomy (not lumpectomy) and to die from their breast cancer.^{12,13} Many factors might explain these findings, including complex medical considerations and patients' preferences.^{14,15} Physi-

cal access barriers, potentially discriminatory attitudes, and other environmental factors also might contribute to worse outcomes among women with disabilities.^{14–19}

Through in-depth interviews with women with mobility impairments who had early-stage breast cancer, we aimed to learn how mobility difficulties affected their breast cancer diagnosis, treatment, and recovery. We also examined how breast cancer treatments affected their mobility. We identified issues that clinicians should consider in caring for women in these circumstances.

Materials and Methods

Participants

We included English-speaking women with early-stage breast cancer < age 60 years who had chronic difficulty walking or used wheeled mobility aids at the time of their

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breast cancer diagnoses. To avoid interfering with active treatment concerns, we excluded women undergoing initial therapy. We identified potential interviewees by reviewing patient panels of breast cancer oncologists and through informal networks of women with disabilities. We did not review medical records, relying on participants' reports of early-stage cancer. Given our qualitative research goals, we anticipated that we would need to recruit approximately 20 interviewees.²⁰ We identified 22 candidates, and 20 women completed their interviews. With these 20 participants, we appeared to achieve thematic saturation (i.e., later interviews added little new insight). Three of the 20 women came from the physician panel review, and 17 were identified through the networks of women with disabilities.

Data collection

As our conceptual model, we used the disability framework proposed by the World Health Organization (WHO)²¹ and recommended by the Institute of Medicine (IOM).¹ We developed a semistructured, open-ended interview guide using this framework, published literature, and our previous research to suggest factors that could affect breast cancer diagnosis and treatment experiences of disabled women.^{9,14–16} One researcher (L.I.I.) tested the draft guide during interviews with 2 women who met inclusion criteria (interviews excluded from analysis) and revised the protocol after reviewing findings with other investigators.⁸ We planned to offer interviewees the opportunity of inviting a family member or friend to join the interview or to be interviewed separately. Therefore, we produced three versions of the interview guide (woman only, woman plus family member or friend, and family member or friend only; we have not analyzed data using information from the family member or friend interviews here).

Examples of question topics include:

- Brief history and description of disabling condition and physical functional abilities at the time of breast cancer diagnosis
- Healthcare experiences at the time of breast cancer diagnosis, including a description of how the cancer was detected
- Description of breast cancer type and stage, process for selecting cancer treatment, and cancer treatment experiences
- Perceptions of how the disability affected cancer risks and treatment decision making, including issues of body image relating to disability and breast cancer
- Perceptions of barriers to care, including the physical environment and social attitudes (of the woman herself, her family and friends, physicians and other healthcare professionals, and society at large)
- Perceptions of outcomes of care, including current disability status and effects of breast cancer treatments on disability and daily activities

The presence of family members did not appear to affect women's willingness to respond to questions. The three interview guides are available on request.

One researcher (L.I.I.) made all contacts with interviewees and performed all interviews, either in person (six metropolitan Boston interviewees) or by telephone. Interviews occurred from December 2007 to October 2008; each took 1–2

hours. The interviewer offered participants the opportunity for a family member or friend to participate during the interview or to be interviewed separately about the woman's experiences. Two husbands and one female relative joined the in-person interviews. Four family members or relatives of the telephone interviewees also were interviewed (two husbands, one son, and one friend, each interviewed separately from the woman with breast cancer); however, we did not analyze transcripts from these four interviews for this article (they provided little additional information on the topics addressed here). Given the nature of the topics, the interviewer informed participants that she uses a wheelchair.^{22–24} The women with breast cancer received a \$100 cash gift card for participation, and family members or friends received a \$75 cash gift card.

Analysis

Interview audiotapes were professionally transcribed. Analyses applied the inductive concepts of grounded theory²⁵ through in-depth reviews of the interview transcripts. After initial discussions after reviews of the entire interview transcripts, one researcher (L.I.I.) went through all 20 transcripts and electronically sorted text segments into 30 broad topic areas for in-depth analysis (some segments went into more than one topic area). All investigators reviewed the full texts as well as these sorted texts to identify common elements and overarching themes. Applying an iterative process of comparing each of the investigator's analysis results to the raw transcripts, we reached complete consensus about our findings.

This study received approval from institutional review boards at Beth Israel Deaconess Medical Center and Massachusetts General Hospital in Boston.

Results

Table 1 presents demographic and other characteristics of the 20 interviewees, including information about mobility aid use at the time of their breast cancer diagnosis. Half of the interviewees used wheeled mobility aids (manual or power wheelchairs or scooters) when diagnosed, and half used ambulation aids (canes, crutches, or walkers) either occasionally (4 women) or constantly (7 women).

Thematic analyses of the interview transcripts found that mobility limitations affected key steps along their longitudinal course of care, as follows: the way their breast cancer was diagnosed; women's breast cancer treatment decisions; their breast cancer treatment experiences, including surgery, chemotherapy, radiation therapy, and long-term hormonal treatments; and certain outcomes of care. We address each of these areas sequentially below. Table 2 summarizes these thematic findings and makes broad recommendations to improve care within each area. Some recommendations, such as selecting and purchasing accessible equipment, must be considered within the context of available space (e.g., room size) and finding the option that best suits the practice environment. This will require practitioners to investigate different features of equipment to maximize accessibility for their patients and staff; these topics are not addressed here.

Diagnosis of breast cancer

Mammograms. Ten interviewees had their cancers detected during screening mammography, 2 during routine

TABLE 1. CHARACTERISTICS OF 20 INTERVIEWEES

<i>Characteristic</i>	<i>Number</i>
Recruitment source	
Physician panel	3
Social networks of women with disabilities	17
Age at time of breast cancer (at time of interview), years	
30–39	3 (0) ^a
40–49	7 (1)
50–59	10 (11)
60–69	0 (5)
≥ 70	0 (3)
Year of breast cancer diagnosis	
Before 1980	2
1980–1989	3
1990–1999	6
2000–2006	9
Race	
White	17
Other ^b	3
Education	
High school only	2
Some college but no degree	2
College degree	8
Postgraduate education	8
Marital status	
Married or partnered	11
Divorced	3
Widowed	1
Never married	5
Geographic region ^c	
New England	6
Middle Atlantic	4
South	2
Midwest	3
West	5
Underlying disabling condition	
Polio, disabled in childhood or postpolio syndrome as adult	9
Spinal cord injury	3
Cerebral palsy	3
Multiple sclerosis	2
Other ^d	3
Mobility aid use at time of breast cancer diagnosis ^e	
Occasional ambulation aid (cane, crutches, walker) use	4
Constant ambulation aid (cane, crutches, walker) use	7
Manual wheelchair	3
Power wheelchair or scooter	6

^aFor each age group row, the numbers not in parentheses indicate the number of interviewees within the age group at the time of breast cancer diagnosis; the numbers in parentheses indicate the number of interviewees within the age group at the time of their interview.

^bTwo women were African American, and one was Asian.

^cInterviewees came from nine states.

^dRheumatoid arthritis, degenerative disk disease, and surgical complication in childhood.

^eSome women used more than one mobility aid; counts here refer to the mobility aid that provides the most support (e.g., wheelchair reported when woman used wheelchair and walker).

physical examinations, and 8 women found their tumors during self-examinations. All women received mammograms at some point, and 16 reported some difficulties obtaining the test. Physically inaccessible equipment was the primary problem, especially for women who could not stand during the test.

Physical positioning and remaining still posed other difficulties. One woman with rheumatoid arthritis (RA) affecting numerous joints reported that radiology technicians wanted her to stand for easier positioning; however, when “I stand still, that’s hard on my knees because I can’t straighten them out. . . . It makes it more painful.” Because of arthritis in her hands, she cannot grip the handles affixed to mammography equipment that help women position their bodies.

A woman with cerebral palsy (CP) who uses a scooter described problems with uncontrollable movements exacerbated by stresses of undergoing mammography: “When somebody has CP and . . . [has] to stay still on demand, that’s harder. . . . You’re expending so much energy trying to stay still. The anxiety . . . [precipitates] more movement. . . . makes me a moving target.” By partnering with radiology technicians willing to work with her, she found the best solution involved having a second technician hold her in position while the first technician performs the study. This method worked better than mild sedation or calming music by ear phones.

Physical examinations. Several interviewees reported that some physicians preferred to examine them while they remained seated in their wheelchairs rather than assisting with transfers onto examining tables. The women worried that breast examinations are inadequate while they are in their wheelchairs. One woman, tetraplegic from polio, said her primary care physician always refused to get her out of her wheelchair and examined her as she remained seated. When she visited a gastroenterologist for inflammatory bowel disease, that physician positioned her on an examination table and conducted a complete physical examination. According to the woman’s husband, the gastroenterologist “was basically filling in as her primary care.” The woman described what happened: “He [the gastroenterologist] was examining me, and he went, ‘Uh-oh.’ ‘Uh-oh, what?’ ‘I found a lump.’ So that’s when we found the lump.”

Surgical treatment

Four women had mastectomies, and 16 had lumpectomies (2 required additional surgery because of unclear margins). Seven interviewees made breast cancer treatment decisions explicitly because of concerns about how various therapies would affect their arms, which are essential to their mobility: they use ambulation aids (canes, crutches, walkers), self-propel manual wheelchairs, or otherwise rely on their arms for mobility and safety (e.g., furniture surfing or wall walking). Five women would not even consider mastectomy because of concerns about postoperative arm complications, such as lymphedema.

“I use my arms [for mobility],” said a woman with multiple sclerosis (MS) who uses a scooter. “To have my left arm not usable would be a disaster for me.” According to a woman disabled by polio who uses underarm crutches and had right-sided breast cancer, “I cannot turn over in bed. I cannot get up from a chair. I literally would be a piece of blubber in one spot if it were not for my right arm.” Other concerns involved wound healing after underarm lymph node removal. A woman who had used bilateral forearm crutches since childhood polio asked her surgeon to minimize the lymph node

TABLE 2. MAJOR CONCERNS OF WOMEN WITH MOBILITY IMPAIRMENTS AND EXAMPLES OF POTENTIAL SOLUTIONS

Concern	Potential recommendation
Diagnosis	
Inaccessible mammography equipment	Install mammography equipment that is accessible (e.g., lowers to wheelchair height, accommodates positioning needs)
Difficulty positioning while standing	Eliminate need to stand by using specially designed mammography chairs
Uncontrollable movements	Involve second mammography technician to assist in holding patient in position
Inaccessible examining table, resulting in woman being examined in her wheelchair	Install examining table that automatically lowers to 17–19 inches from floor for easy transfers ^a
Surgery	
Worries about arm complications, such as lymphedema	Recommend breast-conserving surgery whenever possible
Worries about wound in the axilla complicating ambulation aid use ^b	Use sentinel lymph node approach or least invasive method whenever possible
Anesthesia concerns: mobility impairment or underlying disability compromising respiratory functioning	Consider adjusting anesthesia approaches to address limited ventilatory capacity, other respiratory concerns
Immediate postoperative functional impairments relating to inability to use arm on side of surgery	Assess patients' needs for toileting and other assistance while in hospital; assess home situation (e.g., home occupational therapy evaluation) and ensure that supports are in place for initial recovery period; physical therapy evaluation and potential treatment with goal to regain baseline functioning; arrange rental of power wheelchair, if necessary
Chemotherapy	
Exacerbation of baseline weakness and fatigue	Assess mobility needs and arrange availability of appropriate mobility aids
Exacerbation of underlying disabling condition	Consider adjustment of chemotherapy dosage or administration schedule
Incontinence, toileting difficulties, and concerns about skin integrity	Assess urinary functioning and use appropriate preventive strategies, such as positioning patient near restroom and changing hygienic pads or undergarments if patient is incontinent during and immediately after chemotherapy
Radiation therapy	
Inaccessible equipment	Install accessible equipment ^c
Exacerbation of baseline weakness and fatigue	Assess mobility needs and arrange availability of appropriate mobility aids
Endocrine therapy	
Weight gain from endocrine therapy impeding mobility	Anticipate potential weight gain and discuss implications with patient; will need to have accessible weight scale to monitor weight
Risks of thrombophlebitis	Assess risks of thrombophlebitis and implement appropriate preventive therapy

^aDifferent models of accessible tables are available, some designed to fit into smaller spaces. Beyond automatic lowering, additional accessibility features include an extrawide cushion top, extra weight capacity, adjustable handrails and side panels, and Velcro[®] positioning straps.

^bMany interviewees received their breast cancer treatments before the widespread use of sentinel lymph node biopsy techniques.

^cTable that lowers automatically for easy transfers, and other features.

exploration, concerned that the surgical wound would make “walking with a crutch . . . very, very difficult.”

Anesthesia and postoperative care. Mobility concerns raised questions about surgical anesthesia risks. Several women noted that they needed anesthesia regimens that accounted for respiratory status effects of their underlying disabling condition and impaired mobility. Women disabled by polio voiced particular concerns about anesthesia risks. Other immediate postoperative concerns related directly to women's mobility. One woman disabled by polio who used crutches had anticipated her postoperative difficulties, but her clinicians had not:

I heard [the nurse] say, “Why isn't she moving? Why doesn't she get up . . . ?” I heard the other nurse say, “They tell me she had polio.” But I could tell from listening to them they had no idea what that meant. . . . [Before coming into the hospital I knew that] I probably wouldn't be able to get up to go to the bathroom. . . . I can't even sit up and get onto a bed pan. . . . So I had brought a jar with me. The only thing I could do was . . . to slide off the bed . . . and void into the jar. . . .

Immediate postdischarge concerns. Managing at home after surgery posed major mobility challenges, especially for women who lived alone or were single parents of dependent children. As a woman disabled by polio reported:

They kick you out of the hospital instantly. . . . I literally walk on my arms. I have to take almost 100% of the weight off my legs. They never thought, "How is she going to do that with the 6 to 7 inch scar under her arm?" . . . I had nobody at home to take care of me . . . but I'm a very determined individual. If you can't walk, you crawl. If you can't crawl, you roll [on the floor].

Chemotherapy considerations

Nine interviewees had chemotherapy. Uncertainty about how chemotherapy might affect their mobility sometimes dominated women's decision making. A woman with syringomyelia who self-propels a manual wheelchair consulted numerous physicians to determine if the chemotherapy her oncologist recommended would exacerbate the syringomyelia and impair her arm function. When she found no definitive answers, she decided to forego chemotherapy despite her oncologist's recommending it.

I want to be able as long as I can to push my chair, drive by myself, and ride my bicycle. . . . I'm still pretty athletic. . . . I want to hang onto the last of my health. If [the breast cancer] comes back, then I will march myself into chemo.

Several women reported feeling that they suffered more chemotherapy side effects than do women without mobility problems, primarily weakness and extreme fatigue. "My body doesn't function like the [usual] body," said a woman with spinal cord injury. "My side effects were more serious." A few women indicated that their oncologists modified standard chemotherapy regimens specifically to reduce side effects. A woman with MS said her oncologist administered small chemotherapy doses weekly over an entire year to minimize side effects.

Several women described needing bladder accommodations during chemotherapy. Because of the neurogenic bladder of the woman with MS and her difficulties walking to the bathroom, nurses periodically catheterized her during her weekly chemotherapy sessions, placing her in a single room for privacy during this procedure. A woman with polio gratefully noted being positioned close to the restroom during her outpatient chemotherapy sessions. A woman with CP intentionally dehydrated herself before chemotherapy visits to minimize her bathroom trips; however, this made inserting intravenous lines and drawing blood difficult. "So I started drinking a lot of water," she said. "When I went to the bathroom, I would have a friend walk with me with the IV [intravenous] pole." Another woman worried about urinary incontinence and whether chemotherapy metabolites excreted by the kidneys might affect her skin integrity if she spent time "sitting in those chemicals."

Paradoxically, chemotherapy regimens temporarily improved the health status of several women. Two reported that steroids taken as antiemetic agents provided welcomed albeit time-limited relief for other problems. A woman with CP said that her constant back pain disappeared during chemotherapy. For another:

Beginning with the first week [of chemotherapy], my postpolio muscular atrophy went into remission. I had no pain and no polio fatigue. I had no symptoms of postpolio. I got off my scooter, and I walked around the block. I was euphoric; I was crying; I was so happy. It's like you get the worst diagnosis in the world, and then all of a sudden, you're up walk-

ing. . . . After I stopped the chemo, it took 3 weeks to have my postpolio come back full force.

Radiation therapy experiences

Apart from sporadic physical accessibility difficulties, interviewees reported few specific problems relating to radiation therapy. As with chemotherapy, major concerns involved fatigue and exhaustion, which further compromised women's mobility. Radiation-related fatigue led one woman to seek evaluation, resulting in a diagnosis of postpolio syndrome: "I saw my neurologist after that, and he's the one who ordered the scooter. I didn't really want to use it, but I was very grateful for it once I started using it. I couldn't have continued working [without the scooter]."

Endocrine therapy concerns

Three women raised concerns about weight gains from long-term endocrine therapy (e.g., tamoxifen, anastrozole) making mobility more difficult. Being heavier increased the energy required to self-propel manual wheelchairs or to walk with ambulation aids. "I've never been this fat and heavy," said a woman with MS. When she falls at home, she cannot get up herself, and her weight makes it harder for her husband to lift her from the floor. Before breast cancer, a woman with a spinal cord injury as a teenager had weighed 97 pounds for several decades, but during chemotherapy followed by long-term endocrine therapy, she gained weight and found that:

This weight gain is really affecting my life. . . . I'm sitting in a [wheel]chair that's really too small for me now, but I don't want to give it up because my life is geared to this chair . . . specifically putting it in the car. . . . Because the [wheel]chair is small, I can often get away in places that are not wheelchair accessible [like] a regular stall [in a public bathroom]. . . . But now it's a lot harder to transfer.

Worried about thrombophlebitis risks, a scooter user with MS refused her oncologist's recommendation that she take tamoxifen. Another woman with spinal cord injury noted that anastrozole was "playing havoc with my bone density," which was already tenuous (although only in her early 50s, she had osteoporosis). An interviewee with RA reported that anastrozole had worsened her existing joint pain so significantly that ". . . I was almost screaming." She therefore stopped taking the anastrozole.

Long-term mobility outcomes

Breast cancer treatments clearly worsened the mobility of some interviewees. One woman with CP had previously used a walker but found that moving the walker was too uncomfortable after her left-sided surgery (she is left-handed). She started using a wheelchair because of arm pain and rarely walked again. An interviewee with polio reported:

I had general weakness, and I wasn't as strong. I got real scared to walk. I felt unstable. . . . We had a front porch that was a concrete slab, and when it got . . . wet, my crutches would go out from under me. . . . So I started using a wheelchair. Since then, I've been in a wheelchair.

Several interviewees admitted that it was difficult to disentangle the effects of cancer therapies from the natural progression of their underlying disabilities or the usual

consequences of aging. Observing her functional decline, a woman with CP asked, "Is it aging? Or disability? Or is it a drug? It's a blurry, fuzzy picture. . . . Is your balance worse because you're older? Is your balance worse because that's what happens to people with CP? Is it the tamoxifen? Of course, you blame everything on the new drug, right?"

Discussion

Increasing numbers of American women are living with mobility disabilities and entering age ranges with increased risks of developing breast cancer.^{2,26} Based on the experiences of the 20 interviewees, mobility impairments can affect women at every point during early-stage breast cancer diagnosis, therapy, and recovery. Furthermore, breast cancer treatment can further impair women's mobility functioning. If their level of functioning is precarious, even slight worsening could tip them toward needing greater mobility aid support or losing the ability to live independently. Although specific underlying conditions can raise particular concerns, mobility impairments—regardless of etiology—carry important implications that clinicians should consider for women newly diagnosed with breast cancer.

Women with walking difficulties frequently rely on their arms for mobility. In making decisions about breast cancer therapy, these women must consider the implications of each treatment modality for arm strength, pain, and functionality. Addressing this issue may require consultation with multidisciplinary teams, including various oncology specialties and rehabilitation professionals, including physiatrists, physical therapists, and occupational therapists. Women who rely extensively on their arms may need additional assistance during the immediate postoperative period, including both inpatient and outpatient surgical recovery. For instance, a woman with a significant surgical wound who self-propels a manual wheelchair may benefit from renting a power wheelchair while her wound heals. She may also need physical therapy to address deconditioning effects of not using her arms before returning to manual wheelchair use. A home occupational therapy evaluation may assist in identifying barriers within the home that could be remedied and in developing strategies for performing routine activities of daily living more safely, efficiently, and comfortably.

Beyond arm functioning, mobility difficulties might affect treatment decision making on multiple levels, including anesthesia regimens,^{27,28} chemotherapy dosages, mobility aid needs, thromboembolism risks,^{29,30} osteoporosis,^{30,31} and weight gains with adjuvant therapy (both chemotherapy and endocrine therapy).^{32–35} At each point, multidisciplinary teams of clinicians should explicitly discuss with patients how their mobility might interact with or affect treatments and potential outcomes. Complicating these discussions is the lack of scientific evidence about how specific disabling conditions might interact with various aspects of treatment regimens. As the woman with syringomyelia noted, there were no clinical trials about how breast cancer chemotherapy affects syringomyelia.

Physical barriers in healthcare settings can impede access for women with mobility limitations and require creativity and commitment to overcome.³⁶ These barriers might help explain broader findings about lower mammography use among women with physical disabilities.^{6–11} Partnerships

between patients and clinicians or other staff (radiology technicians) can produce solutions that work, such as assisting with position during mammography and for complete physical examinations. Ensuring that patients receive complete physical examinations and technically acceptable radiographic studies is essential to providing high-quality care. Section 4203 of the Patient Protection and Affordable Care Act, signed by President Barack Obama on March 23, 2010, requires the federal Access Board, in consultation with the Food and Drug Administration, to specify physical access standards for medical diagnostic equipment, including radiographic equipment and examination tables. These mandates must be met within 24 months of the law's signing.

Despite confronting physical barriers, however, the 20 women studied here used similar approaches to find their breast cancers as those used by women in a population-based study of breast cancers detection. In that study, which used Wisconsin Cancer Registry Data, approximately 41% of breast cancers were detected by mammography, 48% by self-breast examination, and 11% by a physician during a physical examination.³⁷ Among the 20 women interviewed here, 50% had their cancers detected on mammography, 40% by breast self-examination, and 10% by physicians.

Finding that 40% of the interviewees detected their tumors by self-examination is especially intriguing in light of recent controversies surrounding recommendations of the U.S. Preventive Services Task Force (USPSTF) for breast cancer screening.³⁸ In its November 2009 recommendations, the USPSTF gave teaching breast self-examinations a rating of D, indicating that "there is moderate or high certainty that the service has no benefit or the harms outweigh the benefits" and suggesting that practitioners "discourage the use of this service."³⁹ Even if the USPSTF had strongly recommended this service, some women with mobility impairments may have manual dexterity or sensory impairments that could impede self-examinations. Given frequent physical barriers to screening mammography, however, which received a grade B recommendation from the USPSTF for women between 50 and 74 years of age,³⁸ educating women with physical disabilities about the full range of options for detecting breast cancer might be indicated. This issue requires further study.

This study has the significant limitations of qualitative interview studies, notably questions about generalizability from our study population. The interviewees were generally highly educated (four fifths had college or postgraduate degrees), and many described having done considerable research about breast cancer when they were diagnosed. Despite concerted outreach efforts, we were able to recruit only 2 African American women and no Hispanic women to participate; women who are racial and ethnic minorities may have substantially different experiences from those of white women, although the physical challenges may be similar. Seventeen women were recruited through informal networks of disabled women, many with polio. Several women disabled by polio suggested that numerous chest radiographs they received during childhood polio treatments heightened their risks for subsequent breast cancer.

In addition, we conducted interviews both in person and by telephone. It is possible that these different communication modalities might have affected the types of responses women provided, especially to potentially sensitive questions. Given feasibility constraints and our desire to include women outside

metropolitan Boston, using these two communication modes seemed reasonable. Some in-person interviews included family members, most of whom primarily confirmed assertions of the women or assisted in amplifying their comments. It is possible that interviews including family members might have produced somewhat different findings from individual interviews with the same women (e.g., different people frequently remember different things about the same situations). Finally, the breast cancer experiences of our study sample spanned several decades, raising questions about the relevance of some of the older experiences for today. Nonetheless, despite the 1990 passage of the Americans with Disabilities Act (ADA) and the 2008 passage of the ADA Amendments Act,⁴⁰ healthcare facilities often remain physically inaccessible.^{8,14,15,41}

Conclusions

Our findings highlight several areas where additional research is required, especially population-based studies that produce generalizable findings. Clinical researchers should systematically gather information on how cancer treatments affect the functional impairments of women with physical disabilities, including both negative and potentially positive effects. These findings not only could better inform women's decisions about breast cancer therapies but also might provide further insights into possible treatments for underlying disabling conditions, as well as their pathophysiological mechanisms. Other important questions involve the effects of breast cancer diagnoses and treatments on the ability of women with physical disabilities to live independently in their homes and communities. Identifying which specific accommodations can best facilitate continued independent living is critical. Additional research must also explore whether disabled women who are racial and ethnic minorities confront additional or different barriers to breast cancer care.

This study identifies issues that clinicians should consider in caring for women with mobility impairments who develop early-stage breast cancer. Although these women confront many of the same concerns that other women newly diagnosed with breast cancer experience, their disability raises additional issues. A critical question is whether after surviving her initial breast cancer treatments, a woman with mobility impairments will be able to continue living independently and functioning within her home and community. Careful attention to mobility issues—patients in partnership with multidisciplinary teams of clinicians—is essential to achieving this functional outcome.

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Disclosure Statement

The authors have no conflicts of interest to report.

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