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Physician attitudes about cost consciousness for breast cancer treatment: differences by cancer sub-specialty

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Abstract

Purpose: High costs of cancer care place considerable burden on patients and society. Despite increasing recognition that providers should play a role in reducing care costs, how physicians across cancer specialties differ in their cost—consciousness has not been reported. We examined cost—consciousness regarding breast cancer care among medical oncologists, surgeons, and radiation oncologists.

Methods: We identified 514 cancer surgeons, 504 medical oncologists, and 251 radiation oncologists by patient report through the iCanCare study. iCanCare identified newly diagnosed women with breast cancer through the Surveillance, Epidemiology, and End Results (SEER) registries of Georgia and Los Angeles. We queried providers on three dimensions of cost—consciousness: (1) perceived importance of cost saving for society, patients, practice, and payers; (2) awareness of patient out-of-pocket expenses; and (3) discussion of financial burden.

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Author contributions

We acknowledge the contributions of our staff members on this project: KR: Conceptualization of the original study including questionnaire design and data collection, data analyses, writing and editing of the manuscript. MCM: Data analysis, writing and editing of the manuscript. SJK: Conceptualization of the original study including questionnaire design and data collection, data analyses, and editing of the manuscript. RJ: Conceptualization of the original study including questionnaire design and data collection, data analyses, writing and editing of the manuscript. MRP: Data analyses, writing and editing of the manuscript.

Conflict of interest

The authors declare they have no conflict of interest.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee of the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was received from all individual participants included in the study by way of a signed form of consent provided by the journal.

Results: We received responses from 376 surgeons (73%), 304 medical oncologists (60%), and 169 radiation oncologists (67%). Overall levels of cost—consciousness were moderate, with scores ranging from 2.5 to 3.0 out of 5. After adjusting for covariates, surgeons had the lowest scores on all three cost—consciousness measures; medical oncologists had the highest scores. Pairwise contrasts showed surgeons had significantly lower scores than medical oncologists for all three measures and significantly lower scores than radiation oncologists for two of the three cost—consciousness variables: importance of cost saving and discussion of financial burden.

Conclusions: How cost—consciousness impacts medical decision-making across specialty and how policy, structural, and behavioral interventions might sensitize providers regarding cost-related matters merit further examination.

Keywords

Cost—consciousness; Financial toxicity; Cancer care costs; Surgeons; Medical oncologists; Radiation oncologists

Introduction

Rising costs related to detection, diagnosis, and treatment of cancer make it one of the most expensive medical conditions in the U.S [1]. The high costs of cancer care create significant financial toxicity for patients and place considerable burden on both private and government payers/insurers [2–9].

There is increasing recognition that providers should play a role in reducing the costs of medical care [1, 2]. However, less is known about how much physicians treating cancer consider the cost of tests and treatments or try to mitigate the potential for patient financial toxicity. Prior work has shown that among U.S. physicians more generally, cost-consciousness is driven by compensation structures [10] and training context [6]. Specifically, providers paid by salary or salary plus bonus, as opposed to fee-for-service, report higher cost-consciousness [10], and providers trained in settings with higher overall rates of health care utilization report lower consciousness [6]. Those practicing in medical schools and government-funded clinics have higher levels of cost—consciousness whereas those in solo and group private practices have the lowest levels [10]. In the primary care setting, providers who are more cost—consciousness use fewer lower value services [7].

With regard to cancer care providers, several studies indicate that the majority of cancer providers consider costs in their decision-making, particularly patient's out-of-pocket obligations [11–13], although their ability to discuss cost issues appears only moderate [11, 13]. Academic oncologists are more likely to report that cost does not influence their clinical practice and that it should not limit access to care [14].

No reports have examined how physicians from different medical specialties may differ in their cost—consciousness. Given the complex, multidisciplinary nature of oncology care, patients typically interact with physicians from several different specialties after diagnosis in the course of making decisions, many of which have the potential for substantial financial implications. Understanding these physicians' attitudes, awareness, and behaviors

regarding the financial impact of treatment decisions—and whether they vary systematically by discipline–is critical to inform interventions that seek to mitigate financial toxicity of cancer survivors. Therefore, the purpose of this study was to examine cost-consciousness regarding breast cancer care among medical oncologists, cancer surgeons, and radiation oncologists. We queried three related dimensions of cost—consciousness; (1) perceived importance of cost saving for society, patients, practice, and payers, (2) awareness of patient out-of-pocket expenses, and (3) discussion of financial burden. These measures address attitudes, knowledge, and behavior in this context.

Methods

Data for these analyses were collected as part of the larger iCanCare study of breast cancer care delivery, described elsewhere [15–17]. The iCanCare study was a study of women newly diagnosed with breast cancer, identified through the population-based Surveillance, Epidemiology and End Results (SEER) registries of Georgia and Los Angeles, along with their treating physicians. More specifically, we first identified women aged 20–79 years diagnosed with early-stage breast cancer between January 2013 and September 2015, as reported to the SEER registries of Georgia and Los Angeles County, using rapid case ascertainment methods. After IRB approval, we surveyed patients (median time from diagnosis to survey response 7 months) and merged responses with SEER data. Exclusion criteria included prior breast cancer, stage III-IV disease, or tumors > 5 cm. We provided a $20 incentive and used a modified Dillman approach to improve response rate [18]. Of 7303 patients surveyed, 5080 (70%) responded.

We then conducted a survey of physicians delivering care to these patients. Attending surgeons, medical oncologists, and radiation oncologists were identified primarily through patient report, supplemented by information in the SEER database. Most patients identified an attending surgeon (94%) and/or medical oncologist (81%); about half (53%) identified a radiation oncologist (a lower proportion, as expected, given that radiation therapy is not a part of every breast cancer patient's experience). Patients provided contact information and study staff followed-up with providers and sent study questionnaires.

From the 514 identified surgeons, 504 identified medical oncologists, and 251 identified radiation oncologists, we obtained survey responses from 376 surgeons (73%), 304 medical oncologists (60%), and 169 radiation oncologists (67%). These responses provide the data for the current analyses.

Measures

Cost-consciousness

We assessed three dimensions of physician **cost-consciousness**. Given the need for brief measures due to the overall length of the provider survey, we created new items informed by prior studies [10–12, 14, 19]. Whereas many prior measures focus on attitudes about the appropriateness of cost—consciousness (i.e., *should* providers weigh cost in their decision-making), our items focused more on its perceived importance, provider awareness

of patient financial burden, and practice level discussion of financial burden. The physician questionnaire content was pre-tested and revised in an iterative process.

The first measure, which we refer to as "**importance of cost saving**," comprised four items, all beginning with the same stem: When it comes to breast cancer treatment, how important to you is it to… (1) Save society money, (2) Save my patients money, (3) Save my practice money, and (4) Save insurers/payers money. Each item was answered on a five-point scale with response options: Not at all, A little, Somewhat, Quite, and Extremely. The four items were combined, using the simple mean, into a single scale which had an internal consistency of 0.84. None of the items merited exclusion based on the criterion that removal reduced internal consistency. Scale values were only calculated for physicians who responded to at least three of the four items

(99.6% of the sample). The scale score ranged from 1 to 5 with a mean of 2.52 and standard deviation of 0.91.

The remaining two measures each comprised single items, assessing **awareness of out-of-pocket costs** and **discussion of financial burden**. Specifically, the two items were: (1) "How **aware are you of the out-of-pocket costs** of the tests and treatments you recommend?" Responses ranged from not at all aware to very aware, using a five-point scale (1–5), and (2) "How often does someone in your primary practice **discuss the financial burden** of cancer treatments with your patients?" (never, rarely, sometimes, often, and always, scored 1–5). We treated these items as continuous response. The means (and standard deviations) of these two items were 3.04 (1.05) and 2.96 (1.10), respectively.

Physician characteristics assessed included specialty (medical oncologist, surgeon, or radiation oncologist) and self-reported annual volume of new breast cancer patients, whether in a teaching practice (did they teach residents or fellows, yes/no), years of experience, gender, age, and SEER site.

Analyses

We first present sample demographics (Table 1) and then adjusted means of the three cost-consciousness measures across the three medical subspecialties. A priori we included several potential confounders in the multivariable models of these three cost—consciousness measures. These include gender, study site, teaching practice, volume of new breast cancer patients in the past year, and years in practice. Comparison between specialties was performed with adjustment for multiple testing using the Bonferroni method. SAS version 9.4 was used for all analysis. All statistical tests were two-sided and performed at the 95% confidence level.

Results

Table 1 describes the study sample. Surgeons were older and had substantially more years in practice than both medical oncologists and radiation oncologists. Surgeons treated the fewest breast cancer patients per year followed by medical oncologists. They were also the most

likely to be in teaching practices. There were no differences among specialties by gender or SEER site.

Independent of specialty, the means of the three cost measures were 2.52, 3.04 and 2.96, respectively for the importance of cost saving, awareness of out-of-pocket costs and discussion of financial burden, respectively. After adjusting for demographic covariates, surgeons had the lowest scores on all three cost-consciousness measures, followed by radiation oncologists (Table 2). For the four-item “importance of cost saving” scale, the mean for surgeons was 2.26, compared to 2.76 and 2.66 for medical oncologists and radiation oncologists, respectively. For the “awareness of out-of-pocket expenses” and “discussion of financial burden” items, the means were 2.87, 3.27, and 3.04, and 2.49, 3.40, and 3.26 for surgeons, medical oncologists, and radiation oncologists, respectively. The pairwise contrasts showed surgeons had significantly lower scores than medical oncologists for all three measures and significantly lower scores than radiation oncologists for two of the three cost-consciousness variables: importance of cost saving and discussion of financial burden.

Providers from teaching practices showed significantly lower scores for awareness of out-of-pocket costs and discussion of financial burden than those from non-teaching sites. Additionally, higher patient volume was significantly associated with higher reported importance of saving costs and awareness of out-of-pocket costs. Lastly, years in practice was inversely associated with importance of cost saving but positively associated with awareness of out-of-pocket costs as well as discussion of financial burden.

Discussion

In this study of over 840 physicians from three different specialties caring for women with breast cancer, we found relatively low levels of cost—consciousness across all three dimensions assessed; perceived importance, awareness of costs, and discussions with patients. Scores ranged from 2.5 to 3.0 out of a maximum score of 5. Notably, values differed by specialty with surgeons reporting the lowest levels of cost—consciousness on all three measures compared to radiation and medical oncologists. This is, to our knowledge, the first study to compare cost—consciousness across cancer specialties.

Several factors may contribute to surgeons having lower cost—consciousness. First, there may be fewer differences in patient-facing costs of different surgical options than associated with systemic therapy and radiation treatment decisions. For example, depending on insurance coverage, the out-of-pocket costs from the performance of the main surgical procedure itself may not vary substantially, whether the patient has a more minimal approach, such as lumpectomy and sentinel node biopsy, or a more extensive surgery, like a modified radical mastectomy with axillary lymph node dissection. To the extent that is true, lower cost—consciousness may not be a function of surgeons’ disregard for cost, but more that it is less relevant in their scope of work than for oncologists and radiation oncologists. On the other hand, cost-related factors may be equally relevant to surgical care, for example, when patients have high deductibles or are uninsured, and surgeons may in fact attend less to these issues, even if it may be appropriate to do so. Further, even when insured,

those undergoing more extensive surgical procedures may have ongoing costs for supplies such as post-mastectomy supplies, and our prior work has shown that patients undergoing more extensive surgical procedures are vulnerable to missing more work, which has clear downstream implications for patients' financial well-being.

Independent of specialty, scores ranged from 2.5 to about 3.0, out of a maximum of 5 across the three cost-consciousness scales. This indicates only a moderate degree of cost-consciousness among breast cancer providers. One factor that might suppress cost—consciousness is that it could be perceived as being less "patient-centered" to consider cost in decision-making with tests and treatments, particularly when newer methods are more expensive. There may then be some degree of social desirability to report low cost-consciousness, as this may be seen as an indication that a provider offers high quality of care irrespective of a patient's ability to pay. Second, cost—consciousness may be lower in our sample of providers because their patients were more likely to have health insurance (only 5% reported no insurance), and therefore, they may assume that all of their cancer care is covered. It may be particularly important to intervene with providers whose patients have insurance coverage, as patient financial concerns with cancer care are apparent across those with both private and government-sponsored insurance [3, 5, 12, 19, 20]. Finally, these findings highlight the fact that medical education has not routinely incorporated training about costs of care or training in communication about costs with patients. Consequently, physicians may not view these issues as within their professional scope, may feel powerless in helping patients to navigate financial issues because of a lack of knowledge about potential available resources, or may worry that consideration of cost would distract from discussions of treatment decisions that they believe should be made independent of cost considerations. Future research is necessary to explore in greater depth the barriers to physician cost—consciousness.

Limitations

We used new, brief measures of cost—consciousness. Although they were based on prior measures and were pretested with providers, they may nonetheless have failed to capture important dimensions of the constructs. Given that we used somewhat different measures of the construct, direct comparison to other studies is difficult.

Our patient sample was more likely to be insured than the general population, with only 5% reporting having no insurance, which is lower than the national average [21]. Given this, providers in our sample may have been less concerned with cost savings than they might otherwise have been among patients who were uninsured or underinsured. Our study did not examine how provider cost—consciousness impacted patients, and this is an important subject for future research. Also, our measure did not differentiate between costs related to the primary procedure and those related to recovery and missed work.

Implications

We observed only moderate levels of cost—consciousness across providers, and also observed specialty differences with surgeons reporting lower cost—consciousness than medical oncologists and radiation oncologists. How cost-consciousness impacts medical

decision-making across specialty and how policy, structural, and behavioral interventions might sensitize providers regarding cost-related matters merit further examination.

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Table 1

Sample demographics

	Surgeons (*n* = 376)	Medical oncologists (*n* = 304)	Radiation oncologists (*n* = 169)	*P* value for Chi square (categorical) or *t* test (means)
Site				
California	187 (49.7%)	145 (47.7%)	81 (46.3%)	0.73
Georgia	189 (50.3%)	159 (52.3%)	94 (53.7%)	
Gender				
Male	277 (75.1%)	203 (67.7%)	121 (72.0%)	0.11
Female	92 (24.9%)	97 (32.3%)	47 (28.0%)	
Practice trains residents				
Yes	110 (29.8%)[a]	59 (20.0%)[a]	47 (27.5%)	0.01
No	259 (70.2%)	236 (80.0%)	124 (72.5%)	
Breast cancer patient volume				
None-20	142 (39.2%)[a,b]	64 (22.8%)[a,c]	21 (13.0%)[b,c]	< 0.0001
21–50	112 (30.9%)	108 (38.4%)	47 (29.2%)	
> 51	108 (29.8%)	109 (38.8%)	93 (57.8%)	
Years practice	20.82 ± 10.83[a, b]	15.85 ± 11.17[a]	17.46 ± 10.93[b]	< 0.0001
Age in years	53.75 ± 10.81[a, b]	49.50 ± 10.90[a]	50.25 ± 10.85[b]	< 0.0001

[a,b,c]Common superscript indicates pairwise significance across specialty, after adjusting for multiple com- parisons

Table 2

Predicted means for three cost-consciousness variables

	Cost saving	Awareness of out-of-pocket	Discussion of financial Durden
Overall	2.52 (2.45, 2.57)	3.04 (5.97, 3.11)	2.96 (2.89, 3.03)
Site			
California	2.48 (2.40, 2.57)	2.98 (2.87, 3.08)	2.77 (2.67, 2.86) **
Georgia	2.54 (2.45, 2.63)	3.11 (3.01, 3.22)	3.16 (3.05, 3.26)
Gender			
Male	2.50 (2.43, 2.58)	3.06 (2.98, 3.15)	2.93 (2.85, 3.01)
Female	2.53 (2.41, 2.66)	2.99 (2.84, 3.14)	3.03 (2.89, 3.17)
Practice trains residents/fellows			
Yes	2.43 (2.30, 2.55)	2.84 (2.70, 2.99) **	2.72 (2.58, 2.86) **
No	2.54 (2.47, 2.61)	3.11 (3.03, 3.20)	3.04 (2.96, 3.13)
Annual breast cancer patient volume			
None-20	2.41 (2.29, 2.53) *	2.89 (2.75, 3.03) **	2.87 (2.73, 3.00)
21–50	2.48 (2.37, 2.58)	2.94 (2.81, 3.07)	2.91 (2.78, 3.03)
> 51	2.62 (2.52, 2.72)	3.24 (3.12, 3.37)	3.07 (2.95, 3.19)
Years in practice			
At 5 yrs	2.60 (2.50, 2.70) *	2.90 (2.78, 3.02) **	2.83 (2.72, 2.94) **
At 15 yrs	2.54 (2.47, 2.60)	3.01 (2.93, 3.08)	2.93 (2.85, 3.00)
At 25 yrs	2.47 (2.40, 2.54)	3.11 (3.02, 3.20)	3.02 (2.94, 3.10)
Specialty			
Medical oncologist	2.76 (2.65, 2.86) **[a]	3.27 (3.14, 3.39) **[a]	3.40 (3.28, 3.52) **[a]
Radiation oncologist	2.66 (2.52, 2.81)[b]	3.04 (2.87, 3.21)	3.26 (3.10, 3.42)[b]
Breast surgeon	2.26 (2.17, 2.35)[a, b]	2.87 (2.76, 2.98)[a]	2.49 (2.39, 2.60)[a, b]

Values for each scale ranged from 1 to 5 with 5 representing higher cost-consciousness

* Overall Group differences significant at alpha = 0.05

** Overall Group differences significant at alpha = 0.01. Common superscript indicates significant pairwise differences between specialties

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