

Breast Biopsy Notification Preferences and Health Literacy

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Received Feb. 15, 2024; Accepted for publication July 8, 2024; Published online Sept. 5, 2024
<https://doi.org/10.17161/kjm.voll7.21709>

ABSTRACT

Introduction. Communication of breast biopsy results varies and does not always meet patient expectations. This study aimed to determine how patients previously diagnosed with breast cancer preferred to receive their biopsy results, including preferences for communication methods, the type of medical professional delivering the results, and wait time. Additionally, we evaluated how health literacy might affect these preferences.

Methods. English-speaking female patients who had previously been diagnosed with breast cancer were surveyed at a breast surgery clinic in Wichita, Kansas. The survey included the Brief Health Literacy Screen (BHLS), questions on how they received their biopsy results, and their preferences for receiving results. Participants were classified as having adequate or inadequate literacy based on their BHLS responses and a scoring system from previous research.

Results. The study included 101 participants. Overall, 64% preferred in-person communication, 40% preferred to hear from their primary care physician, 36% from their surgeon, and 56% wanted results within 24 hours. There was no statistically significant difference in preferences based on health literacy, including communication method ($p = 0.44$), type of medical professional ($p = 0.56$), and wait time ($p = 0.38$).

Conclusions. Most participants preferred to receive biopsy results indicating a breast cancer diagnosis in-person, regardless of their health literacy. While it may be sufficient to call a patient with benign biopsy results, it is recommended to offer an in-person discussion for cancer diagnoses, respecting the patient's preference.

Kans J Med 2024;17:96-99

INTRODUCTION

More than one million patients undergo breast biopsies annually in the U.S.¹ There is considerable variability in how results are disclosed, and patient preferences are not always met.²⁻⁴ Age, race, internet access, and marital status have previously been identified as factors associated with how patients prefer receiving their breast biopsy results.^{2,5}

Inadequate health literacy, limiting a patient's ability to read, understand, and act on healthcare information,⁶ affects approximately one-third of Americans and is associated with patients' preferences for receiving other cancer biopsy results.⁷⁻¹⁰ It is unknown if health literacy is associated with result disclosure preferences among patients who have undergone breast biopsies. This research sought to determine if health literacy is associated with notification preferences among patients who have undergone breast biopsy procedures.

METHODS

Female patients 18 years and older who were diagnosed with breast cancer within the last five years were eligible to participate in this study between May 10 and August 31, 2021. Non-English-speaking patients and those requiring a legally authorized representative were excluded. Eligible participants were invited to complete a paper survey by their nurse during an office visit with their breast surgeon. No financial compensation or other incentives were offered. This study was approved by the Institutional Review Boards (IRB) at the University of Kansas Medical Center and Ascension Via Christi Hospitals.

Collected demographic information included age, race, ethnicity, highest education level, and internet access.¹¹ Health literacy was assessed using the Brief Health Literacy Screen (BHLS), a validated three-question measure.¹² Each response was assigned a score from one to five. A score of three or less on any question, or a cumulative score of nine or less, was defined as "inadequate health literacy."^{10,12}

Participants reported how they received their biopsy results and their preferences, including the modality (e.g., telephone, patient portal, in-person, U.S. mail), provider (e.g., primary care provider, radiologist, nurse, breast surgeon), and wait time to receive results (e.g., within 24 hours, 1-2 days, 3-5 days, 5-7 days).^{2,5} Participants ranked the importance of several factors, such as receiving results as soon as they were available, from someone they knew, or from a specialist who could better explain the results.⁵

Study data were collected and managed using REDCap[®] electronic data capture tools hosted at the University of Kansas Medical Center.^{13,14} SAS 9.4 was used for all data analyses. Chi-square tests were used to examine the association between preferred biopsy result disclosure characteristics and demographic variables, health literacy level, and highest patient priority.

RESULTS

Of the 103 surveys returned, 101 were completed. Most participants reported being 60 years or older (72%, $n = 73$) and White (73%, $n = 74$; Table 1). Almost one-third (30%, $n = 31$) had inadequate health literacy.

Most participants reported receiving their results over the telephone (50%, $n = 47$) or in-person (46%, $n = 44$; Table 2). Among participants with inadequate health literacy, 64% ($n = 18$) received biopsy results in-person, compared to 27% ($n = 26$) with adequate health literacy ($p = 0.059$). Most respondents preferred to receive results in-person (64%, $n = 59$). Of these, 71% ($n = 42$) received results in-person, while 25% ($n = 15$) received results via telephone.

The highest reported first priorities of respondents were receiving results as soon as they were available (68%, $n = 65$), receiving results from a breast specialist (20%, $n = 19$), or from their primary care physician (11%, $n = 11$). There were no differences in preferences for how results were delivered, the type of clinician who delivered the results, or the wait time to receive results based on participants' health literacy (Table 3).

Table 1. Demographic information of respondents.

Variable	%	Frequency
Age (years)		
18 to 29	0%	0
30 to 39	1%	1
40 to 49	6%	7
50 to 59	19%	20
60 to 69	25%	26
70 to 79	37%	38
80 to 88	8%	9
Race and ethnicity		
White	73%	74
Black or African American	5%	6
Asian	4%	5
Hispanic or Latino	7%	8
<i>Other</i>	7%	8
Education		
Not completed high school	8%	9
High school	29%	30
College/university	42%	43
Graduate school	18%	19
Internet access		
Yes	85%	86
No	13%	13
<i>Missing</i>	2%	2
Distance from breast surgeon's office		
10 miles or less	34%	34
11 to 25 miles	44%	44
26 to 50 miles	15%	15
Greater than 50 miles	7%	7
<i>Missing</i>	1%	1
Time since biopsy results received		
Less than 1 month ago	27%	27
1 to 3 months ago	7%	7
4 to 6 months ago	1%	1
7 to 9 months ago	3%	3
9 to 11 months ago	1%	1
12 or more months ago	59%	58
<i>Missing</i>	3%	4

Table 2. Notification experiences vs. preferences of survey respondents.

Notification Variable	How Actually Notified	Notification Preference	p-value
Notification method			<0.0001
In the clinic, face-to-face	46% (44)	64% (59)	
Telephone	50% (47)	33% (31)	
E-mail	1% (1)	1% (1)	
Secure online portal	1% (1)	0% (0)	
U.S. mail	1% (1)	0% (0)	
Passive notification	0% (0)	1% (1)	
<i>Missing</i>	7% (7)	8% (9)	
Clinician communicating results			<0.0001
Radiologist	13% (13)	18% (16)	
Primary care provider	38% (36)	40% (36)	
Primary care provider's nurse	6% (6)	3% (3)	
Radiologist's nurse	1% (1)	1% (1)	
Breast specialist	36% (34)	36% (32)	
<i>Missing</i>	8% (8)	13% (13)	
Wait time for results			0.02
Within 24 hours	20% (17)	56% (52)	
1 to 2 days	40% (34)	39% (36)	
3 to 5 days	27% (23)	3% (3)	
5 to 7 days	11% (10)	1% (1)	
<i>Missing</i>	16% (17)	8% (9)	

Table 3. Notification preferences and health literacy.

Preference Variable	Health Literacy		p-value
	Adequate	Inadequate	
Modality preference			0.44
In the clinic, face-to-face	60% (39)	74% (20)	
Over the telephone	36% (24)	25% (7)	
E-mail	1% (1)	0% (0)	
Passive notification	1% (1)	0% (0)	
<i>Missing</i>	7% (5)	12% (4)	
Provider preference			0.56
Radiologist	18% (11)	18% (5)	
Primary care provider	39% (24)	44% (12)	
Primary care provider's nurse	3% (2)	3% (1)	
Radiologist's nurse	0% (0)	3% (1)	
Breast specialist	39% (24)	29% (8)	
<i>Missing</i>	12% (9)	12% (4)	
Wait time preference after biopsy			0.38
Within 24 hours	56% (37)	55% (15)	
1 to 2 days	36% (24)	44% (12)	
3 to 5 days	4% (3)	0% (0)	
5 to 7 days	1% (1)	0% (0)	
<i>Missing</i>	7% (5)	12% (4)	

Two participants added comments about their experiences. One wrote,

“One thing that was traumatizing for me is I was told by the biopsy radiologist (at the appt, when I had no support) that it was most likely cancer. To have this news delivered... when I was alone, was awful. Truly one of the hardest parts of my whole treatment.”

Another participant reported, *“It is nerve-wracking being here today, waiting for results w/o knowing pos or ng. —this [was] one week post.”*

DISCUSSION

Most participants reported that their biopsy results were delivered as they preferred. However, many who preferred an in-person discussion received their results over the phone. Patient preferences may depend on whether the biopsy results are benign or cancerous. A survey of patients before receiving their breast biopsy results suggested that most (~70%) preferred receiving results over the telephone.⁵ This sample included patients who eventually received both positive and negative results. In comparison, patients who received positive results only were more likely to prefer face-to-face communication; a prior survey of breast cancer survivors reported that 50% would have preferred face-to-face results,² while 64% of participants in this study preferred face-to-face communication.

When cancer diagnoses are disclosed in-person rather than over the phone, conversations tend to be longer and more often include discussions of treatment options, which increases patient satisfaction.³ In-person conversations may also allow more involvement of patients' partners in initial discussions, enhancing satisfaction with treatment decision-making.¹⁵ Despite the increasing trend of sharing biopsy results over the phone, it remains crucial to follow best communication practices.⁴

As expected, the most important factor for most participants was a speedy turnaround.^{2,5,10,16,17} Interestingly, nearly 60% of participants who prioritized quick results also preferred in-person communication. Virtual visits may facilitate these face-to-face discussions more quickly for those with cancerous results.

More participants with inadequate health literacy reported receiving their diagnosis in-person compared to those with adequate health literacy. Providers may have sensed that in-person notification could benefit some patients based on perceived understanding or other factors. A follow-up study could poll providers to identify factors influencing the choice of in-person diagnosis versus other modalities. One-third of participants had low health literacy, which can make navigating a breast cancer diagnosis and treatment challenging. Future research could explore why patients with different levels of health literacy have varied diagnosis experiences.

Limitations. Most participants were White, older than 60 years, and highly educated, which limits the generalizability of this study.^{18,19} All participants had a positive biopsy result and were diagnosed with cancer; therefore, the findings may not be applicable to all patients who receive a breast biopsy result, including those with negative biopsies. The survey did not include questions about the availability of a partner, family member, or other support person when the patient was notified of the positive result. Additionally, online patient portal utilization in Wichita is lower than the national average, which may limit the

generalizability of findings about modality preferences.²⁰ Finally, participants were surveyed up to five years after diagnosis, potentially introducing recall bias.

CONCLUSIONS

Surveyed patients preferred to receive their breast biopsy results in-person and as quickly as possible, regardless of health literacy. While prior surveys of patients before receiving their biopsy results indicated a preference for telephone communication, this study of patients diagnosed with breast cancer after a positive biopsy suggests that, when delivering bad news, patients should be offered an in-person appointment whenever possible. With the increased availability of telehealth, virtual visits may allow patients to benefit from in-person communication of a cancer diagnosis while minimizing wait times. Further studies should explore how providers or nurse navigators decide which patients may benefit from an in-person appointment, why patients with lower health literacy are more likely to have an in-person appointment, and how to increase patient satisfaction with specific modalities (e.g., in-person, phone) logistically, including the involvement of a partner or trusted support person.

ACKNOWLEDGMENTS

The authors thank Ms. Rosalee Zackula for her assistance with REDCap® and data management.

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Keywords: biopsy, large core needle, breast neoplasms, health literacy, truth disclosure