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Research Article

Breast MRI Use Uncommon among U.S. Women

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Abstract

Background: The goal of breast cancer screening is to reduce breast cancer mortality. Mammography is the standard screening method for detecting breast cancer early. Breast MRI is recommended to be used in conjunction with mammography for screening subsets of women at high risk for breast cancer. We offer the first study to provide national estimates of breast MRI use among women in the United States.

Methods: We analyzed data from women who responded to questions about having a breast MRI on the 2010 National Health Interview Survey. We assessed report of having a breast MRI and reasons for it by socio-demographic characteristics and access to health care and computed five-year and lifetime breast cancer risk using the Gail model.

Results: Among 11,222 women who responded, almost 5% reported ever having a breast MRI and 2% reported having an MRI within the 2 years preceding the survey. Less than half of the women who reported having a breast MRI were at increased risk. Approximately 60% of women reported having the breast MRI for diagnostic reasons. Women who ever had a breast MRI were more likely to be older, Black, and insured and to report a usual source of health care as compared with women who reported no MRI.

Conclusions: Breast MRI use may be underused or overused in certain subgroups of women.

Impact: As access to health care improves, the use of breast MRI and the appropriateness of its use for breast cancer detection will be important to monitor. *Cancer Epidemiol Biomarkers Prev; 22(1); 159–66. ©2012 AACR.*

Introduction

The goal of screening for breast cancer is to reduce the number of women who die from breast cancer while providing the least adverse impact on women who do not have breast cancer, but this can only occur with early detection of clinically relevant breast cancer and appropriate treatment. Currently, mammography is the best way to identify breast cancer before it is clinically detectable (1, 2). However, mammography will only detect 65% to 90% of breast cancers, and sensitivity is lower among women with dense breast tissue. Furthermore, mammography has a false-positive rate of 2% to 11% (3, 4). In addition to its high false-positive rates, screening mammography is associated with overdiagnosis of ductal carcinoma *in situ* and invasive breast cancer (5). Thus, research continues on the development of imaging tools with higher sensitivity and specificity for detecting clinically relevant breast cancer.

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Breast MRI, which uses magnetic fields instead of X-rays, is a tool that has received great interest in its use for breast cancer detection. Breast MRI sensitivity ranges from 80% to 95% for detecting breast cancer. However, it has a higher false-positive rate of 20% to 80%, compared with mammography (6–9). Breast MRI has been primarily used as a diagnostic tool to assess abnormalities identified by mammography and the extent of known breast cancer (10, 11). In more recent years, breast MRI has shown some benefit in the detection of breast cancer, especially for women with multifocal disease, who have dense breasts, or at high risk of breast cancer secondary to inherited genetic mutations (9, 12, 13).

In 2007, the American Cancer Society (ACS) published recommendations for annual breast MRI along with annual mammography screening for women who have 20% or more lifetime risk for developing breast cancer, who carry the *BRCA* mutation, or have a first-degree relative with *BRCA* mutation (14). However, the extent to which breast MRI has been used in the United States is not well known. To estimate the use of breast MRI, the Centers for Disease Control and Prevention and the National Cancer Institute cosponsored the inclusion of several new questions on use of breast MRI in the Cancer Control Supplement to the 2010 U.S. National Health Interview Survey (NHIS). In this article, we describe the proportion of women in the United States who have had breast MRI, their reasons for having it, and factors associated with breast MRI use.

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Table 1. Characteristics of women aged 30 years and older who reported having or not having had a breast MRI—NHIS, United States, 2010

	All ($n = 11,222$)	Ever MRI ($n = 545$)	Recent MRI[a] ($n = 253$)	No MRI ($n = 10,677$)	
	Wtd% (95% CI)	Wtd% (95% CI)	Wtd% (95% CI)	Wtd% (95% CI)	*P* value[b]
Total	100%	4.7 (4.3–5.2)	2.1 (1.8–2.5)	95.3 (94.8–95.7)	
Age	$N = 11,222$	$N = 545$	$N = 253$	$N = 10,677$	<0.0001
30–39	21.6 (20.7–22.5)	7.0 (4.8–10.1)	9.0 (5.5–14.4)	22.3 (21.4–23.3)	
40–49	23.2 (22.3–24.2)	21.2 (17.1–26.0)	26.0 (19.6–33.7)	23.3 (22.4–24.4)	
50–64	31.9 (30.8–32.9)	43.5 (38.8–48.2)	40.6 (33.6–48.1)	31.3 (30.2–32.4)	
65–74	12.3 (11.6–13.1)	13.7 (10.7–17.4)	14.1 (9.8–19.8)	12.3 (11.6–13.0)	
75+	10.9 (10.3–11.6)	14.6 (11.5–18.4)	10.2 (6.8–15.1)	10.7 (10.1–11.5)	
Race	$N = 11,222$	$N = 545$	$N = 253$	$N = 10,677$	0.0160
White, non-Hispanic	70.5 (69.3–71.6)	68.5 (64.0–72.6)	56.9 (49.5–63.9)	70.6 (69.3–71.8)	
Black, non-Hispanic	11.9 (11.1–12.7)	16.8 (13.3–21.1)	24.3 (18.2–31.6)	11.6 (10.8–12.5)	
Asian, non-Hispanic	4.8 (4.3–5.3)	3.3 (2.1–5.2)	5.1 (2.9–8.9)	4.8 (4.3–5.4)	
Other, non-Hispanic	1.0 (0.8–1.3)	1.0 (0.3–3.1)	1.1 (0.2–5.0)	1.0 (0.8–1.3)	
Hispanic	11.9 (11.2–12.7)	10.4 (8.1–13.1)	12.6 (9.0–17.4)	12.0 (11.2–12.7)	
Education	$N = 11,184$	$N = 540$	$N = 251$	$N = 10,644$	0.8967
<High school graduate	13.8 (13.0–14.6)	12.5 (9.9–15.8)	14.0 (9.7–19.7)	13.8 (13.0–14.7)	
High school graduate	26.9 (25.9–27.9)	27.8 (23.6–32.5)	25.6 (19.8–32.5)	26.9 (25.9–27.9)	
Some college	30.3 (29.3–31.4)	30.6 (25.9–35.8)	29.4 (22.9–36.8)	30.3 (29.3–31.4)	
≥College graduate	29.0 (27.8–30.3)	29.0 (24.5–34.1)	31.0 (24.8–38.0)	29.0 (27.8–30.3)	
Income status, %FPL	$N = 11,222$	$N = 545$	$N = 253$	$N = 10,677$	0.2476
<100	12.0 (11.3–12.8)	12.0 (9.4–15.3)	15.5 (11.2–21.0)	12.0 (11.3–12.8)	
100–199	19.0 (18.0–19.9)	15.1 (11.6–19.4)	15.9 (11.0–22.5)	19.1 (18.2–20.2)	
200–299	16.5 (15.6–17.5)	15.2 (11.7–19.4)	12.2 (8.1–18.0)	16.6 (15.6–17.6)	
300–399	14.2 (13.3–15.1)	15.3 (11.1–20.8)	17.5 (12.3–24.4)	14.1 (13.3–15.0)	
400+	38.3 (36.9–39.8)	42.4 (37.2–47.8)	38.8 (31.8–46.3)	38.1 (36.7–39.6)	
Region	$N = 11,222$	$N = 545$	$N = 253$	$N = 10,677$	0.3408
Northeast	17.7 (16.5–18.8)	19.0 (15.2–23.4)	21.4 (14.6–30.3)	17.6 (16.5–18.8)	
Midwest	23.1 (21.9–24.3)	19.4 (16.1–23.2)	20.2 (15.0–26.5)	23.3 (22.1–24.5)	
South	35.8 (34.3–37.4)	38.1 (33.1–43.3)	37.3 (30.2–45.0)	35.7 (34.1–37.3)	
West	23.4 (22.0–24.9)	23.6 (19.4–28.4)	21.1 (15.6–27.9)	23.4 (22.0–24.9)	
Insurance coverage	$N = 11,197$	$N = 543$	$N = 253$	$N = 10,654$	0.0178
Private	68.7 (67.6–69.9)	72.8 (68.1–77.0)	68.6 (62.0–74.5)	68.5 (67.3–69.7)	
Public Only	18.1 (17.3–19.0)	18.7 (15.3–22.7)	19.6 (15.0–25.2)	18.1 (17.2–19.0)	
Uninsured	13.1 (12.4–13.9)	8.5 (6.2–11.6)	11.8 (7.7–17.7)	13.4 (12.6–14.2)	
Usual source of healthcare	$N = 11,222$	$N = 545$	$N = 253$	$N = 10,677$	0.0064
Yes	90.1 (89.4–90.8)	93.7 (91.1–95.6)	94.2 (90.2–96.6)	89.9 (89.2–90.6)	
No	9.9 (9.2–10.6)	6.3 (4.4–8.9)	5.8 (3.4–9.8)	10.1 (9.4–10.8)	
Had recent mammogram[a]	$N = 11,126$	$N = 541$	$N = 251$	$N = 10,585$	<0.0001
Yes	55.4 (54.2–56.6)	80.9 (76.8–84.5)	90.8 (85.0–94.5)	54.2 (52.9–55.4)	
No	44.6 (43.4–45.8)	19.1 (15.5–23.2)	9.2 (5.5–15.0)	45.8 (44.6–47.1)	

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Table 1. Characteristics of women aged 30 years and older who reported having or not having had a breast MRI—NHIS, United States, 2010 (Cont'd)

	All ($n = 11,222$) Wtd% (95% CI)	Ever MRI ($n = 545$) Wtd% (95% CI)	Recent MRI[a] ($n = 253$) Wtd% (95% CI)	No MRI ($n = 10,677$) Wtd% (95% CI)	*P* value[b]
Results of recent mammogram	$N = 8,452$	$N = 523$	$N = 243$	$N = 7,929$	<0.0001
Normal	89.4 (88.5–90.2)	76.2 (72.0–80.0)	64.5 (57.8–70.7)	90.2 (89.3–91.1)	
Abnormal	10.6 (9.8–11.5)	23.8 (20.0–28.0)	35.5 (29.3–42.2)	9.8 (8.9–10.7)	
Number of prior breast biopsies	$N = 8,384$	$N = 495$	$N = 231$	$N = 7,889$	<0.0001
0	81.2 (80.2–82.2)	60.8 (55.3–66.0)	66.4 (58.5–73.5)	82.5 (81.4–83.5)	
≥1	18.8 (17.8–19.8)	39.2 (34.0–44.7)	33.6 (26.5–41.5)	17.5 (16.5–18.6)	
Family history of breast cancer	$N = 10,801$	$N = 527$	$N = 248$	$N = 10,274$	<0.0001
Yes	12.1 (11.3–12.9)	19.6 (15.7–24.2)	20.9 (15.4–27.8)	11.7 (11.0–12.5)	
No	87.9 (87.1–88.7)	80.4 (75.8–84.3)	79.1 (72.2–84.6)	88.3 (87.5–89.0)	
Personal history of breast cancer	$N = 11,202$	$N = 543$	$N = 253$	$N = 10,659$	<0.0001
Yes	3.3 (2.9–3.7)	23.2 (19.1–27.8)	24.6 (18.5–31.8)	2.3 (2.0–2.6)	
No	96.7 (96.3–97.1)	76.8 (72.2–80.9)	75.4 (68.2–81.5)	97.7 (97.4–98.0)	
Personal history of other cancer	$N = 11,209$	$N = 545$	$N = 253$	$N = 10,664$	0.0015
Yes	8.3 (7.8–9.0)	13.0 (9.9–17.0)	13.5 (8.9–19.8)	8.1 (7.5–8.8)	
No	91.7 (91.0–92.2)	87.0 (83.0–90.1)	86.5 (80.2–91.1)	91.9 (91.2–92.5)	
Gail 5-year risk	$N = 10,822$	$N = 417$	$N = 190$	$N = 10,405$	<0.0001
Average risk	82.1 (81.2–82.9)	70.1 (64.1–75.5)	73.9 (65.8–80.6)	82.5 (81.6–83.4)	
Increased risk (≥1.66%)	17.9 (17.1–18.8)	29.9 (24.5–35.9)	26.1 (19.4–34.2)	17.5 (16.6–18.4)	
Gail lifetime risk	$N = 10,822$	$N = 417$	$N = 190$	$N = 10,405$	0.0041
<20%	98.9 (98.7–99.1)	97.0 (93.9–98.6)	98.7 (94.5–99.7)	99.0 (98.8–99.2)	
≥20%	1.1 (0.9–1.3)	3.0 (1.4–6.1)	1.3 (0.3–5.5)	1.0 (0.8–1.2)	

[a]Recent defined as having within past 2 years.

[b]*P* value based on Rao–Scott Pearson χ^2 test testing for differences in ever and no MRI for all variables except income status. Income status *P* value based on Wald *F* test from unadjusted logistic regression model (due to multiply imputed data).

Materials and Methods

We used data from the 2010 NHIS, a nationally representative sample of the civilian, noninstitutionalized, and household population of the United States (15). The NHIS is an annual, multipurpose health survey administered by the National Center for Health Statistics (NCHS) with data collected through in-person interviews. Basic health, demographic, and cancer history information is available from the Sample Adult Core of the Basic Module. In 2010, the NHIS Cancer Control Supplement included questions about cancer history, cancer screening, family history of cancer, and other health-related behaviors. A total of 27,157 adults were interviewed in the 2010 NHIS, with a final sample adult response rate of 60.8%. Our study sample included women of ages 30 years and older who responded to the series of questions related to breast MRI use.

Breast MRI

Respondents were asked whether they had ever had a breast MRI and if so, when they had their most recent one. From these responses, we defined women as having had a recent breast MRI if they reported having one within the 2 years preceding survey. Although the ACS guidelines for breast MRI screening recommends annual MRI for high-risk women, there were too few women who reported

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having breast MRIs to examine its use within 1 year. Respondents were also asked to select, from a series of reasons, their main reason for having this breast MRI: a follow-up of an abnormal mammogram; because of a breast problem; because my healthcare provider told me I was high risk; I have a family history of breast cancer; part of a routine examination; I requested it; and other. From these responses, we defined the breast MRI as a screening examination if they indicated that they requested it, it was part of a routine examination, because they were told they were at high risk, or had a family history of breast cancer. We defined the breast MRI as a diagnostic examination if they reported it was a follow-up of an abnormal mammogram or because of a breast problem.

Breast cancer risk

We examined various risk factors for breast cancer as they would influence whether a woman reported having a recent breast MRI, and whether a woman reported the reasons for the breast MRI as screening or diagnostic. These factors included results of the most recent mammogram (normal, abnormal), number of prior breast biopsies (0, ≥1), family history of breast cancer (yes, no), and personal history of breast cancer (yes, no). We also examined whether a woman had a mammogram within the past 2 years (yes, no) and a personal history of any other cancer (yes, no).

In addition, we computed 5-year and lifetime Gail risk scores for the women in our study population who reported no prior history of breast cancer. We determined their composite risk for developing breast cancer (16–18) using the National Cancer Institute Breast Cancer Risk Assessment Tool model (19). Data from the 2000 and 2005 NHIS have been used previously to estimate the U.S. population 5-year and lifetime risk of developing breast cancer (20–22). These studies computed Gail scores using age (<50 years, ≥50 years), age at menarche (<12 years, 12–13 years, and ≥14 years), age at first live birth (<20 years, 20–24 years, 25–29 years or nulliparous, and ≥30 years), number of benign breast biopsies (0, 1, and ≥2), and number of first-degree relatives with breast carcinoma (0, 1, and ≥2). Women with absolute 5-year risk of 1.66% or more or lifetime risk of 20% or more were considered to be at increased risk for developing breast cancer, and those with lower scores were considered average risk.

Correlates of breast MRI use

We also examined various sociodemographic characteristics and access to health care factors for associations with reported breast MRI use. The sociodemographic characteristics included age (30–39 years, 40–49 years, 50–64 years, 65–74 years, and ≥75 years), race/ethnicity (white non-Hispanic, black non-Hispanic, Asian non-Hispanic, other non-Hispanic, and Hispanic), education (less than high school graduate, high school graduate, some college, and college graduate), income [<100% Federal Poverty Level (FPL), 100%–199% FPL, 200%–299% FPL, 300%–399% FPL, and ≥400% FPL], and region (Northeast, Midwest, South, and West). Poverty threshold data were taken from the multiply imputed income files (23). Access to health care was measured by insurance coverage (privately insured, publicly insured, and uninsured) and usual source of health care (yes, no).

Statistical analyses

Descriptive statistics are presented as weighted percentages with 95% confidence intervals (CI) based on a logit transformation. Statistical testing for differences in weighted percentages was conducted using the Rao–Scott Pearson χ^2 test. We used SAS-callable SUDAAN and SAS survey procedures (version 9.2; SAS) to account for the complex, multistage sampling design and to obtain results weighted to reflect the civilian, noninstitutionalized population of the United States. For all analyses, significance was determined at $P < 0.05$.

Results

Our final sample included 11,222 women who responded "yes" or "no" to having had a breast MRI. Almost 5% of women reported ever receiving a breast MRI, with almost half of these women reporting that they had a recent MRI (Table 1). Women who reported ever having an MRI were more likely to be older, Black, and have a usual source of health care and less likely to be uninsured compared with women who reported never having a breast MRI. Breast cancer risk factors and mammography use also differed for women who reported ever having a breast MRI. These women were more likely to report having had a recent mammogram, abnormal results from that recent mammogram, prior breast biopsies, a personal history of breast and nonbreast cancer, a family history of breast cancer, and to have an increased 5-year and lifetime breast cancer risk, compared with women who reported not having a breast MRI. On the basis of the Gail model risk score for breast cancer, 18% of the entire sample of women was determined to have an increased 5-year risk for breast cancer and 1% had an increased lifetime risk. Among the women who reported

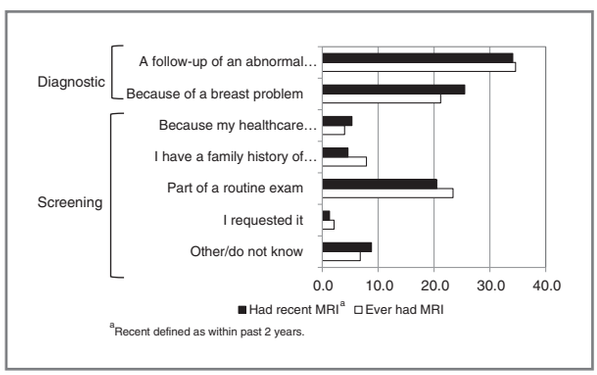

Figure 1. Self-reported reasons for having a breast MRI among women aged 30 years and older—NHIS, United States, 2010.

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Table 2. Characteristics of women aged 30 years and older who reported having had a recent[a] breast MRI for screening versus diagnostic reasons—NHIS, United States, 2010

	Screening[b] $n = 97$	Diagnostic[c] $n = 141$	
	Wtd% (95% CI)	Wtd% (95% CI)	*P* value[d]
Total	40.2 (33.0–47.8)	59.8 (52.2–67.0)	
Age	$N = 97$	$N = 141$	0.3626
30–39	8.5 (4.0–17.3)	10.5 (5.6–18.9)	
40–49	17.6 (10.6–27.8)	29.3 (20.2–40.4)	
50–64	45.6 (34.2–57.6)	37.8 (28.8–47.8)	
65–74	15.3 (8.0–27.4)	14.3 (9.2–21.4)	
75+	12.9 (7.0–22.5)	8.1 (4.5–14.0)	
Race	$N = 97$	$N = 141$	0.1819
White, non-Hispanic	54.8 (42.5–66.5)	58.3 (48.8–67.3)	
Black, non-Hispanic	26.5 (17.7–37.9)	22.8 (15.4–32.2)	
Asian, non-Hispanic	1.3 (0.4–4.1)	6.8 (3.5–12.8)	
Other, non-Hispanic	2.2 (0.3–13.9)	0.0 (0.0–2.6)	
Hispanic	15.2 (8.8–25.2)	12.1 (7.6–18.8)	
Education	$N = 97$	$N = 139$	0.0426
<High school graduate	19.6 (12.0–30.3)	11.0 (6.6–17.8)	
High school graduate	25.7 (17.5–36.1)	25.3 (17.5–35.1)	
Some college	34.6 (24.1–46.8)	25.4 (17.5–35.3)	
≥College graduate	20.2 (12.3–31.3)	38.3 (29.7–47.7)	
Income status, %FPL	$N = 97$	$N = 141$	0.2344
<100	19.1 (12.1–28.9)	14.7 (9.4–22.2)	
100–199	16.7 (9.7–27.1)	15.6 (9.0–25.5)	
200–299	13.3 (7.0–23.8)	10.1 (5.4–18.1)	
300–399	21.8 (12.8–34.5)	12.9 (7.6–21.0)	
400+	29.1 (19.4–41.2)	46.8 (37.4–56.4)	
Region	$N = 97$	$N = 141$	0.7080
Northeast	18.6 (10.4–31.2)	23.1 (13.7–36.3)	
Midwest	21.0 (13.0–32.1)	20.6 (13.7–29.7)	
South	34.9 (25.0–46.4)	37.9 (28.4–48.5)	
West	25.4 (16.8–36.6)	18.4 (12.3–26.7)	
Insurance coverage	$N = 97$	$N = 141$	0.0457
Private	62.2 (50.9–72.4)	71.7 (62.6–79.3)	
Public Only	27.9 (18.9–39.1)	13.7 (9.0–20.3)	
Uninsured	9.8 (4.7–19.4)	14.6 (8.6–23.6)	
Usual source of healthcare	$N = 97$	$N = 141$	0.6538
Yes	92.8 (84.2–96.9)	94.4 (89.2–97.1)	
No	7.2 (3.1–15.8)	5.6 (2.9–10.8)	
Had recent mammogram[a]	$N = 97$	$N = 139$	0.7128
Yes	89.1 (81.3–93.9)	90.9 (80.8–95.9)	
No	10.9 (6.1–18.7)	9.1 (4.1–19.2)	

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Table 2. Characteristics of women aged 30 years and older who reported having had a recent[a] breast MRI for screening versus diagnostic reasons—NHIS, United States, 2010 (Cont'd)

	Screening[b] $n = 97$	Diagnostic[c] $n = 141$	
	Wtd% (95% CI)	Wtd% (95% CI)	*P* value[d]
Results of recent mammogram	$N = 89$	$N = 139$	0.0001
Normal	80.7 (69.3–88.6)	49.3 (40.0–58.7)	
Abnormal	19.3 (11.4–30.7)	50.7 (41.3–60.0)	
Number of prior breast biopsies	$N = 87$	$N = 130$	0.0472
0	73.5 (61.3–83.0)	58.7 (48.4–68.3)	
≥1	26.5 (17.0–38.7)	41.3 (31.7–51.6)	
Family history of breast cancer	$N = 96$	$N = 137$	0.1403
Yes	27.6 (17.2–41.1)	17.3 (11.0–26.0)	
No	72.4 (58.9–82.8)	82.7 (74.0–89.0)	
Personal history of breast cancer	$N = 97$	$N = 141$	0.0081
Yes	14.4 (8.0–24.6)	32.7 (23.6–43.3)	
No	85.6 (75.4–92.0)	67.3 (56.7–76.4)	
Personal history of other cancer	$N = 97$	$N = 141$	0.3773
Yes	13.9 (7.2–25.2)	9.8 (5.7–16.6)	
No	86.1 (74.8–92.8)	90.2 (83.4–94.3)	
Gail 5-year risk	$N = 82$	$N = 95$	0.0396
Average risk	64.0 (51.0–75.2)	80.3 (69.2–88.1)	
Increased risk (≥1.66%)	36.0 (24.8–49.0)	19.7 (11.9–30.8)	
Gail lifetime risk	$N = 82$	$N = 95$	0.6270
<20%	98.0 (87.3–99.7)	99.0 (93.1–99.9)	
≥20%	2.0 (0.3–12.7)	1.0 (0.1–6.9)	

[a]Recent defined as having within past 2 years.

[b]Screening responses include part of a routine examination, my healthcare provider told me I was high-risk, I have a family history of breast cancer, and I requested it.

[c]Diagnostic responses include follow-up of an abnormal mammogram and because of a breast problem.

[d]*P* value based on Rao–Scott Pearson χ^2 test for all variables except income status. Income status *P* value based on Wald *F* test from unadjusted logistic regression model (due to multiply imputed data).

ever having a breast MRI, only 30% had an increased 5-year risk and 3% had an increased lifetime risk. Among women who reported a recent breast MRI, only 26% had an increased 5-year risk and 1% an increased lifetime risk. Approximately 6% of women with increased 5-year risk for breast cancer and 10% with increased lifetime risk reported ever having had an MRI (data not shown). In comparison, among women at average 5-year and lifetime risk, 3% and 4%, respectively, reported ever having had an MRI.

Among women who reported ever having or having had recent breast MRI, the most common reason for having the MRI was "follow-up of an abnormal mammogram," followed by "because of a breast problem," and "part of a routine exam" (Fig. 1). Among women who reported having a recent breast MRI, 60% reported diagnostic reasons for this MRI (Table 2). There were statistically significant differences in education and insurance coverage between these 2 groups. Women reporting a screening MRI were more likely to report a normal recent mammogram and to have an increased 5-year risk for breast cancer and were less likely to report a prior breast biopsy or a personal history of breast cancer.

Discussion

Although breast MRI has recently been recommended as an adjunct tool for breast cancer screening among women who are at high risk, the number of women in this group is limited. We found that approximately 18% of women in our study had an increased 5-year risk for breast cancer and 1% had a 20% or more lifetime risk representing approximately 14.8 million and 879,000

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women, respectively. These findings are consistent with previous studies (20–22). Women who reported having a breast MRI were more likely to report risk factors for breast cancer or to have an estimated increased risk for breast cancer compared with other women. However, reports of having a breast MRI were uncommon among women at increased risk for breast cancer.

Even though this study has a large sample size representative of U.S. women of ages 30 years and older, there are several limitations. First, NHIS data are self-reported, which are subject to recall bias. Studies have shown that self-report of mammography use results in overestimates of rates of screening (24, 25). There are no comparable data related to the accuracy of breast MRI recall. Second, NHIS data do not capture information about *BRCA* genetic mutations for breast cancer and only captures first-degree relatives with a history of breast cancer that could result in an underestimate of women at increased risk for breast cancer. Third, data on reasons for obtaining a breast MRI may not provide a complete picture. Because only one reason is listed in the data, the NHIS does not delineate whether a single or combined set of factors resulted in a woman having a breast MRI. Finally, because this is the first year that breast MRI questions have been asked on a national survey, recent MRI use could not be defined as within 1 year preceding the survey to be consistent with screening recommendations due to few women reported having a breast MRI.

Our study is the first to provide national estimates of breast MRI use. These data suggest both underuse and overuse among subsets of women. When more data become available, future studies could explore the influence of insurance coverage, health system characteristics, provider behavior, and patient preferences on breast MRI use. As access to health care improves and screening guidelines associated with breast MRI become more widely adopted, it will be important to monitor the use of breast MRI and the appropriateness of its use for breast cancer detection.

Disclosure of Potential Conflicts of Interest

No potential conflicts of interest were disclosed. The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Authors' Contributions

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Analysis and interpretation of data (e.g., statistical analysis, biostatistics, computational analysis): J.W. Miller, S.A. Sabatino, T.D. Thompson, N. Breen, M.C. White, A.B. Ryerson
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