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## Ductal carcinoma in situ (DCIS): posttreatment follow-up care among Latina and non-Latina White women

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## Abstract

**Background**—There is a lack of information about posttreatment care among patients with ductal carcinoma in situ (DCIS). This study compares posttreatment care by ethnicity–language and physician specialty among Latina and White women with DCIS.

**Methods**—Latina and White women diagnosed with DCIS between 2002 and 2005 identified through the California Cancer Registry completed a telephone survey in 2006. Main outcomes were breast surveillance, lifestyle counseling, and follow-up physician specialty.

**Key results**—Of 742 women (396 White, 349 Latinas), most (90 %) had at least one clinical breast exam (CBE). Among women treated with breast-conserving surgery (BCS;  $N=503$ ), 76 % had received at least two mammograms. While 92 % of all women had follow-up with a breast specialist, Spanish-speaking Latinas had the lowest specialist follow-up rates (84 %) of all groups. Lifestyle counseling was low with only 53 % discussing exercise, 43 % weight, and 31 % alcohol in relation to their DCIS. In multivariable analysis, Spanish-speaking Latinas with BCS had lower odds of receiving the recommended mammography screening in the year following treatment compared to Whites (OR 0.5; 95 % CI, 0.2–0.9). Regardless of ethnicity–language, seeing both a specialist and primary care physician increased the odds of mammography screening and CBE (OR 1.6; 95 % CI, 1.2–2.3 and OR 1.9; 95 % CI, 1.3–2.8), as well as having discussions about exercise, weight, and alcohol use, compared to seeing a specialist only.

**Conclusions**—Most women reported appropriate surveillance after DCIS treatment. However, our results suggest less adequate follow-up for Spanish-speaking Latinas, possibly due to language barriers or insurance access.

**Implications for Cancer Survivors**—Follow-up with a primary care provider in addition to a breast specialist increases receipt of appropriate follow-up for all women.

## Keywords

DCIS; Posttreatment care; Survivorship; Latina; Language barriers; Health disparities

## Introduction

Ductal carcinoma in situ (DCIS) is a potential precursor to invasive breast cancer with up to 43 % of untreated cases progressing to invasive disease [1]. The incidence of DCIS has been on the rise since the 1970s, coinciding with increasing mammography screening rates. Treatment for DCIS usually consists of surgery to remove the lesion—mastectomy or breast-conserving surgery (BCS) with or without radiation therapy [2]. Although treatment of DCIS can prevent progression to invasive cancer and treated DCIS has a 10-year breast cancer-specific survival rate of 96–98 % [3], recurrence after initial treatment is not uncommon. Rates of recurrence have been estimated to be between 10 and 24 %, with higher rates found among women whose initial lesion was palpable (clinically detected DCIS) compared to women whose DCIS was mammographically detected [2, 4, 5]. Women treated with mastectomy have lower rates of recurrence than those undergoing BCS [2, 3, 6]. Furthermore, regardless of treatment choice, women with DCIS have a greater risk of developing cancer in the contralateral breast than women without a prior diagnosis of DCIS [7–9]. A recent study places the standardized incidence ratio of contralateral DCIS at 4.2 and contra-lateral invasive cancer at 1.4 [9].

Given the increased risk of recurrence and contralateral breast cancer, follow-up care and surveillance after treatment are essential. There are no clear data about the best follow-up

procedures for DCIS; the American Society of Clinical Oncology does not address follow-up care for DCIS specifically but recommends that women receive a physical examination every 3 to 6 months during the first year after treatment for DCIS or invasive cancer and that screening after initial post-treatment mammogram should be obtained as indicated for surveillance of abnormalities [10]. The National Comprehensive Cancer Network recommends that DCIS patients follow-up with a physical exam every 6 to 12 months and that women with BCS receive a mammogram every 6 to 12 months during the first year after treatment [11]. A task force of experts from the American College of Radiology, the American College of Surgeons, the College of American Pathology, and the Society of Surgical Oncology proposed a more specific set of recommendations for DCIS patients which can serve as guidelines for adequate posttreatment care [3]. These recommendations propose that during the first year after surgery, patients with a mastectomy receive one clinical breast exam (CBE) and one mammogram of the contralateral breast, while patients with BCS are recommended two CBE and two mammograms. Although not specifically addressed in the recommendations, research indicates that lack of exercise, being overweight, and drinking all may contribute to recurrence and mortality among breast cancer survivors [12–18]. Thus, comprehensive follow-up care for DCIS should include counseling about these health-related behaviors.

Currently, little is known about the posttreatment care of women treated for DCIS. One study examined adherence to yearly mammograms among DCIS patients treated with BCS and found that while most women had had at least one surveillance mammogram during the first year after treatment, adherence to surveillance declined over time [19]. No other studies, however, have examined other aspects of posttreatment follow-up care among DCIS patients, such as physician follow-up or counseling about lifestyle behaviors. Studies examining follow-up care among invasive breast cancer survivors have also focused mostly on adherence to mammography screening [19–26]. There is also a dearth of information on whether differences in follow-up care exist by ethnicity, language, or age.

Our study aimed to address this knowledge gap by investigating the nature of posttreatment care for DCIS during the first years following treatment among a cohort of Latina and non-Latina White women. We examined utilization of CBE and mammographic screenings, follow-up with a physician, as well as whether women received counseling about lifestyle behaviors from their physicians. Additionally, we examined whether there was a difference in receipt of care by ethnicity and language. Finally, we explored whether women received their follow-up care from a breast specialist alone or if they also had follow-up with a primary care physician (PCP) and whether this additional physician follow-up had an impact on their posttreatment care.

## Methods

### Sample

We sampled women from eight California Cancer Registry (CCR) regions in California. Inclusion criteria were female, age 18 or older, self-identified as Latina or non-Latina White, diagnosed with DCIS between 2002 and 2005, without a history of or subsequent diagnosis of invasive breast cancer, and English- or Spanish-speaking. Exclusion criteria included a physician recommendation that a patient cannot participate in the study or a significant cognitive or mental disability as judged by the interviewer. A more detailed description of study recruitment and procedures has been published elsewhere [27].

## Data collection

Recruitment occurred between January 2005 and September 2006. Telephone interviews were conducted on average 24 months post-diagnosis in English or Spanish, according to the participant's preference. Informed consent was obtained from all participants and all study procedures were approved by the UCSF Committee on Human Research.

## Measures

We specified three main follow-up outcome areas for women with DCIS: breast surveillance, lifestyle counseling, and follow-up physician specialty.

### Breast surveillance

Women were asked about mammographic screening and CBE during the first year after surgery. We derived two breast surveillance outcome variables: (1) CBE in the year following treatment (yes/no) and (2) for the women treated with BCS, receipt of at least two mammograms in the year following treatment (yes/no). We defined adequate receipt of CBE as at least one exam, in order to include both mastectomy and BCS participants in the same model. Additionally, because our survey asked specifically about a mammogram of the affected breast, we used this measure for BCS participants only, excluding those who had mastectomy.

### Lifestyle counseling

Participants were asked if they had discussed lifestyle behaviors with their physicians since their diagnosis. We specifically asked them if physicians had discussed or recommended exercise (yes/no), losing or gaining weight (yes/no), or drinking fewer alcoholic beverages (yes/no).

### Follow-up physician specialty

Women were asked (yes/no) if they had discussed their posttreatment DCIS care with a primary care doctor, gynecologist, surgeon, or oncologist. These categories were not mutually exclusive and patients could report seeing more than one type of physician. We grouped primary care physicians and gynecologists into a PCP category, and surgeons and oncologists into a specialist category. We created a new variable for follow-up physician specialty that included: follow-up with specialist only (yes/no), follow-up with a specialist and PCP (yes/no), and follow-up with other (yes/no). In the other category, we included patients who reported discussing follow-up with a PCP only ( $n=34$ ), a nurse, psychologist, plastic surgeon, radiologist, or other health practitioner, and those who did not follow-up with any type of physician ( $n=10$ ).

## Covariates

### Demographic indicators

Based on self-report, we classified participants as either White or Latina. Latinas were further classified as English- or Spanish-speaking based on their preferred interview language. Other indicators included age at the time of interview (<50 years, 50–60, or >60), married or living with a partner (yes/no), education (<high school, high school/vocational, or >college), employment (yes/no), and household income (<\$20,000, \$20,001–40,000, and >\$40,000). Cases were drawn from five geographical regions: San Francisco Bay Area, Central/Sacramento, Riverside/San Bernardino, Los Angeles/Tri counties, and San Diego/Imperial.

## Insurance

Participants with no insurance ( $n=33$ ) and unknown insurance ( $n=8$ ) were combined with those with public insurance (Medicare, MediCal, and Veterans' Administration) because they were few in number, and were compared to participants with private insurance (HMO or private non-HMO).

## Surgery type

Participants were classified into two groups: women treated with a mastectomy ( $n=239$ ) and those treated with BCS ( $n=503$ ).

## Health-related indicators

The presence of comorbidities was measured using a modified version of the Self-Administered Comorbidity Questionnaire [28]. We calculated body mass index (BMI) using participants' reported height and weight. Scores below 18.5 were categorized as underweight, scores between 18.5 and 24.9 as normal weight, scores between 25.0 and 29.9 as overweight, and those 30 and above as obese. Underweight participants ( $n=7$ ) were grouped with normal weight because of their low numbers.

We assessed alcohol consumption by asking participants how many days in the past month they consumed alcohol and how many drinks on average they consumed during a typical day. One drink was equivalent to one glass of wine, a can or bottle of beer, a cocktail, a shot of liquor, or a wine cooler. We created a variable for number of drinks per month by multiplying the average number of drinks by the number of days participants reported drinking during that particular month.

## Statistical analysis

We used descriptive statistics to illustrate the characteristics of the total sample of women. Chi-square analyses were used to assess differences by physician specialty and ethnicity–language. We fit logistic regression models to examine our three areas of interest: breast surveillance, lifestyle counseling, and follow-up physician specialty.

## Breast surveillance

We estimated the adjusted odds of receiving at least one CBE during the first year after treatment using a logistic regression model. A separate model estimated the adjusted odds of participants treated with BCS receiving at least two mammographic screenings during the first year after treatment. We controlled for demographic, insurance, health-related indicators, surgery type, and follow-up physician specialty variables.

## Lifestyle counseling

We assessed the adjusted odds of receiving counseling about exercise, weight, and/or alcohol consumption, controlling for demographic, insurance, health indicators, surgery type, and follow-up physician specialty variables. In our counseling about alcohol use model, we controlled for number of drinks per month.

## Results

### Descriptive statistics

**Participant characteristics**—Seven hundred forty-five women completed surveys (61 % participation rate), with Whites having a higher completion rate than Latinas (67 vs. 55 %). Three women who did not have surgery were dropped from our analyses. The mean age of

the sample was 57 years (range=47–67 years); women over 60 comprised more than a third of the total sample. The majority of women were either married or living with a partner, were employed, had attended college or higher, and were privately insured. Spanish-speaking Latinas were less affluent, less educated, had lower rates of employment, and were less likely to be privately insured than English-speaking Latinas and Whites. While there were no ethnic–language differences in the proportion of women reporting comorbid conditions, both Spanish- and English-speaking Latinas were more likely to be obese than Whites. Whites reported the highest alcohol consumption of all the groups. There were no differences in type of surgery received by ethnicity–language (Table 1).

**Breast surveillance**—Most women in the sample reported having had at least one CBE during the first year after treatment (90 %). Among women treated with BCS ( $N=503$ ), most (76 %) had received at least two mammograms during the first year after treatment. Spanish-speaking Latinas had significantly lower rates of mammography screening than English-speaking Latinas and Whites (Table 2).

**Lifestyle counseling**—Exercise was the most frequently discussed lifestyle behavior in the years following diagnosis, with 53 % of women reporting such discussions, followed by weight (43 %) and alcohol consumption (31 %). Differences by ethnicity–language in receipt of lifestyle counseling varied by behavior discussed. For instance, discussions about exercise were more common among English-speaking Latinas than Spanish-speaking Latinas or Whites, while discussions about weight were more common among Spanish-speaking Latinas. Discussions about alcohol use occurred less often among Whites, who reported consuming more drinks per month than English- and Spanish-speaking Latinas (Table 2).

**Follow-up physician specialty**—Most women in the study reported discussing their post-treatment DCIS care with at least one physician (96 %), and more than half reported discussing posttreatment care with more than one type of physician. Overall, the majority of women in the study reported discussing posttreatment care with a specialist (92 %), and 52 % reported discussing follow-up with a PCP. Forty-four percent of women discussed posttreatment care with a specialist alone, while 48 % discussed their posttreatment care with both a specialist and a PCP. Compared to English-speaking Latinas and Whites, Spanish-speaking Latinas were less likely to follow-up with a specialist overall, but among those who did report follow-up with a specialist, more reported follow-up with both a specialist and a PCP (Table 2).

## Multivariable analysis

**Breast surveillance**—Compared to Whites, Spanish-speaking Latinas with BCS had lower odds of receiving the recommended two mammography screenings in the year following treatment (OR 0.5; 95 % CI, 0.2–0.9). Regardless of ethnicity–language, seeing both a specialist and PCP for follow-up increased the odds of both mammography screening and CBE (OR 1.6; 95 % CI, 1.2–2.3 and OR 1.9; 95 % CI, 1.3–2.8) compared to seeing a specialist only. BCS patients had increased odds of receiving a CBE compared to mastectomy patients (OR 2.6; 95 % CI, 1.5–4.4). Women living in households earning \$20,000 or less a year had lower odds of receiving a CBE than women in more affluent households (OR 0.5; 95 % CI, 0.3–0.9) (Table 3).

**Lifestyle counseling**—Compared to Whites, English-speaking Latinas had higher odds of discussing exercise (OR 1.6; CI 95 %, 1.0–2.4) and alcohol use with their physicians (OR 1.6; CI 95 %, 1.0–2.6). Spanish-Speaking Latinas had higher odds of discussing their weight with physicians compared to Whites (OR 2.5; CI 95 %, 1.4–4.3). Women over 60 had lower

odds of discussing weight and alcohol use with their physicians than younger women. Not surprisingly, having a higher BMI was associated with greater odds of discussing exercise and weight with a physician. Women reporting follow-up with both a specialist and a PCP had higher odds of discussing all lifestyle behaviors with physicians compared to women reporting follow-up with a specialist only (Table 4).

## Discussion

This paper analyzed a population-based study of Latina and non-Latina White women diagnosed with DCIS to examine posttreatment care. We used expert guidelines as standards for care after DCIS treatment. While we found that, for the most part, women treated with breast-conserving surgery received the recommended standard of two mammograms during the first year after treatment, Spanish-speaking Latinas were less likely than English-speaking Latinas and Whites to have done so. Our data suggest that for Latinas, language barriers significantly impact access to posttreatment mammography.

Language barriers may be a marker for communication, socioeconomic, and acculturation issues. For example, it may be that the Spanish-speaking Latinas in our study experienced poor communication of need for follow-up due to lack of professional interpreters at their visits; they may have lacked physical and insurance access to care as well as the ability to take time off work to pursue follow-up care; they may also have been less acculturated to a health system that emphasizes preventive care. While our study does not allow us to parse out these issues, our results do indicate the need for more attention to this vulnerable group of women after DCIS treatment.

About half of the overall sample reported having discussions with their physicians about exercise, but fewer discussed weight or alcohol use. While there is evidence suggesting that exercise, weight, and alcohol affect risk of recurrence, guidelines largely ignore this aspect of preventive follow-up care, and this inattention may contribute to the lack of discussion [29, 30]. Even after adjusting for comorbidity burden, women over 60 were less likely than younger women to receive counseling about lifestyle behaviors, which potentially places them at an increased risk of recurrence and poor health outcomes. Discussions about alcohol use are of particular importance given the increased risk of breast cancer associated with alcohol use among older women [29, 31], but these discussions occurred less often than discussions of weight and exercise, even among White women who reported the most alcohol consumption.

Follow-up with a specialist has been found to increase likelihood of mammography screening among breast cancer survivors [32]. Spanish-speaking Latinas in our study had lower rates of follow-up with a specialist than Whites or English-speaking Latinas. Whether this is due to a lack of insurance access or a lack of knowledge remains uncertain. Interestingly, many Spanish-speaking Latinas who did follow-up with a specialist also followed up with a PCP. Regardless of the ethnicity–language group, follow-up with both a specialist and a PCP increased the odds of CBE, mammography, and lifestyle counseling. This may be because PCPs reinforce recommendations from specialists and are experienced and comfortable discussing lifestyle behaviors for a range of diseases. Advocates of a comprehensive cancer survivorship care plan recommend that the primary care physician manage the posttreatment care of cancer patients while still relying on specialists for referrals when medically necessary [33]. A clear follow-up plan from the breast specialist with guidance regarding ongoing breast surveillance which can then be coordinated by a PCP may provide the best all-around care for DCIS survivors.



## Study limitations

This was a cross-sectional study; therefore, we cannot make causal inferences about the follow-up outcomes of women. Moreover, as a cross-sectional study, it was a one-time snapshot of women's experiences with DCIS, taken up to 2.5 years after treatment. We relied on patient report over the telephone of their follow-up experiences, not direct observation. While this allowed us to utilize data from a large number of women in a population-based study covering 35 counties in California, it also introduces the potential for recall bias. Recall of follow-up care experiences during women's first year after treatment may have changed over time or have been influenced by more recent experiences. Additionally, reports of breast health outcomes were anchored to the year following treatment, whereas report of lifestyle counseling was any time since diagnosis. Lastly, while our data were collected in 2006, raising the concern that perhaps our results would be different today, we have no reason to believe this to be true. To our knowledge, there are no new guidelines for DCIS follow-up nor has there been a clinical campaign to draw specialist or PCP attention to existing recommendations or to the disparities in follow-up care that our study elucidates.

## Conclusions

Our results suggest important differences in surveillance and counseling after treatment for DCIS according to specialist seen, age, and ethnicity–language of the woman. Interventions aiming to reduce these disparities should involve partnerships between breast specialists and primary care physicians to develop comprehensive posttreatment care plans for all women with DCIS regardless of ethnicity and language. These plans should include breast surveillance for recurrence and new primary cancers and counseling about lifestyle behaviors. Such a collaborative approach may improve the quality of life and health outcomes of women treated for DCIS.

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**Table 1**

Participant characteristics of women treated for DCIS: differences by ethnicity and language

	<b>Ethnicity/language</b>			
	<b>White N=394</b>	<b>Latina (English) N=155</b>	<b>Latina (Spanish) N=193</b>	<b>Total N=742</b>
Age				
Less than 50	112 (28 %)	44 (28 %)	65 (34 %)	221 (30 %)
50–60	130 (33 %)	53 (34 %)	69 (36 %)	253 (34 %)
>60	152 (38 %)	58 (37 %)	59 (31 %)	269 (36 %)
Relationship status				
Married/living with partner	268 (68 %)	100 (65 %)	143 (74 %)	511 (69 %)
Education level <sup>***</sup>				
Any college or higher	308 (79 %)	81 (53 %)	38 (20 %)	427 (58 %)
High school/vocational	73 (19 %)	51 (33 %)	37 (20 %)	161 (22 %)
Less than high school	10 (2 %)	21 (14 %)	114 (60 %)	145 (20 %)
Employment <sup>***</sup>				
Employed full or part time	233 (60 %)	85 (55 %)	75 (40 %)	393 (54 %)
Income <sup>***</sup>				
\$20,000	22 (6 %)	24 (16 %)	67 (35 %)	113 (15 %)
\$20,001–40,000	46 (12 %)	38 (25 %)	41 (21 %)	125 (17 %)
>\$40,000	258 (66 %)	71 (46 %)	29 (15 %)	360 (48 %)
Do not know	68 (17 %)	22 (14 %)	56 (29 %)	146 (20 %)
Geographical region <sup>**</sup>				
Bay Area	128 (33 %)	41 (27 %)	34 (18 %)	203 (27 %)
Sacramento and Central CA	71 (18 %)	39 (25 %)	41 (21 %)	151 (20 %)
Los Angeles and Tri Counties	114 (29 %)	41 (26 %)	72 (37 %)	227 (31 %)
Riverside and San Bernardino	48 (12 %)	25 (16 %)	27 (14 %)	100 (14 %)
San Diego	33 (8 %)	9 (6 %)	19 (10 %)	61 (8 %)
Insurance <sup>***</sup>				
Private insurance	326 (82 %)	119 (76 %)	88 (46 %)	533 (72 %)
Surgery type				
Mastectomy	124 (32 %)	48 (31 %)	67 (35 %)	239 (32 %)
BCS	270 (69 %)	107 (69 %)	126 (65 %)	503 (68 %)
Comorbidities				
Mean (SD)	1.7 (1.6)	2.0 (1.7)	1.8 (1.7)	1.8 (1.6)
Major comorbidity present	100 (25 %)	46 (30 %)	42 (22 %)	188 (25 %)
BMI <sup>***</sup>				
Overweight	112 (29 %)	45 (30 %)	61 (40 %)	218 (32 %)
Obese	81 (21 %)	59 (40 %)	60 (39 %)	200 (29 %)
Alcohol use <sup>***</sup>				
Mean drinks per month (SD)	8.4 (15.7)	3.5 (9.2)	0.6 (2.4)	5.3 (12.7)

<sup>\*\*</sup>*p*<.01;

\*\*\*  
 $p < .001$

**Table 2**

Breast surveillance, lifestyle counseling, and follow-up physician specialty during the first year after DCIS treatment: differences by ethnicity and language

	White N=394	Latina (English) N=155	Latina (Spanish) N=193	Total N=742
Breast surveillance				
Mammography among BCS patients *	214 (80 %)	82 (77 %)	83 (70 %)	379 (76 %)
One annual CBE	356 (90 %)	141 (91 %)	170 (88 %)	667 (90 %)
Lifestyle counseling				
Discussed exercise *	195 (50 %)	95 (63 %)	96 (51 %)	386 (53 %)
Discussed weight ***	129 (33 %)	75 (49 %)	112 (59 %)	316 (43 %)
Discussed alcohol use **	98 (25 %)	56 (36 %)	74 (39 %)	228 (31 %)
Follow-up physician specialty ***				
Specialist only	205 (52 %)	71 (46 %)	52 (27 %)	328 (44 %)
Specialist and PCP	168 (43 %)	77 (50 %)	109 (57 %)	354 (48 %)
Other	20 (5 %)	7 (5 %)	30 (16 %)	57 (8 %)

\*  $p < .05$ ;

\*\*  $p < .01$ ;

\*\*\*  $p < .001$

**Table 3**

Breast surveillance: odds of two mammography screenings and one CBE during the first year after DCIS treatment

	Mammography among BCS patients (N=503) OR (95 % CI)	CBE (N=742) OR (95 % CI)
Race/ethnicity (ref: White)		
Latina (English)	0.9 (0.5–1.7)	0.8 (0.4–1.7)
Latina (Spanish)	0.5 (0.2–0.9)*	1.0 (0.4–2.3)
Age (ref: <50)		
50 to 60	1.3 (0.7–2.3)	0.7 (0.4–1.4)
Over 60	0.9 (0.5–1.7)	0.7 (0.3–1.4)
Education (ref: college and higher)		
Less than high school	1.2 (0.7–1.8)	1.0 (0.5–1.8)
High school or vocational	1.1 (0.7–1.6)	1.5 (0.9–2.5)
Annual household income (ref: >\$40,000)		
\$20,000	1.1 (0.7–1.8)	0.5 (0.3–0.9)*
\$20,001–40,000	0.8 (0.5–1.2)	1.6 (0.9–3.0)
Do not know	1.2 (0.7–1.8)	0.8 (0.5–1.4)
BCS (ref: mastectomy)	N/A	2.6 (1.5–4.4)***
Follow-up physician specialty (ref. specialist only)		
Specialist and PCP	1.6 (1.2–2.3)**	1.9 (1.3–2.8)**
Other	0.5 (0.3–0.7)**	0.4 (0.3–0.7)***

ORs also adjusted for comorbidities, BMI, insurance, and geographical region

\*  $p < .05$ ;

\*\*  $p < .01$ ;

\*\*\*  $p < .001$

**Table 4**

Lifestyle counseling: odds of discussing exercise, weight, and alcohol use with physician

	Discussion of exercise, (N=725) OR (95 % CI)	Discussion of weight, (N=728) OR (95 % CI)	Discussion of alcohol use, (N=730) OR (95 % CI)
Race/ethnicity (ref: White)			
Latina (English)	1.6 (1.0–2.4) *	1.4 (0.9–2.2)	1.6 (1.1–2.6) *
Latina (Spanish)	1.1 (0.6–1.8)	2.5 (1.4–4.3) **	1.5 (0.9–2.7)
Age (ref <50)			
50 to 60	0.9 (0.6–1.3)	1.1 (0.7–1.7)	0.7 (0.5–1.1)
Over 60	0.7 (0.4–1.0)	0.6 (0.4–0.9) *	0.4 (0.3–0.7) ***
Education (ref: college and higher)			
Less than high school	0.8 (0.6–1.2)	1.0 (0.7–1.5)	1.3 (0.9–1.8)
High school or vocational	1.0 (0.8–1.3)	1.0 (0.8–1.4)	1.0 (0.8–1.3)
BMI (ref: <25)			
Overweight (25–29)	1.3 (0.9–1.9)	2.4 (1.6–3.6) ***	1.2 (0.8–1.8)
Obese (≥30)	1.8 (1.2–2.7) **	8.6 (5.5–13.5) ***	1.3 (0.8–2.0)
Follow-up physician specialty (ref: specialist only)			
Specialist and PCP	1.5 (1.1–1.9) **	1.5 (1.1–2.0) **	1.5 (1.2–2.0) **
Other	0.7 (0.5–1.1)	0.7 (0.5–1.1)	0.8 (0.5–1.2)

ORs also adjusted for income, comorbidities, insurance, geographical region, and drinks per month

\*  $p < .05$ ;\*\*  $p < .01$ ;\*\*\*  $p < .001$