

# EFFECT OF FALSE-POSITIVES AND WOMEN'S CHARACTERISTICS ON THE LONG-TERM ATTITUDE TOWARDS BREAST CANCER SCREENING

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## INTRODUCTION

False-positive results may influence adherence to mammography screening. The effectiveness of breast cancer screening is closely related to adequate adherence among the target population. The objective of this study was to evaluate how false-positives and women's characteristics affect the likelihood of reattendance at routine breast cancer screening in a sequence of routine screening invitations.

## METHODS

We performed a retrospective cohort study with data from eight regions, covering 44% of the Spanish target population. We collected information of 1,371,218 women aged 45-69 years, eligible for the next routine screening, who underwent 4,545,346 screening mammograms from 1990 to 2006. We estimated the likelihood of attendance at seven sequential screening mammograms. The study included variables related to the presence of false-positive results in the screening process and to women's personal characteristics (age, HRT use, menopausal status, previous invasive procedures, familial history of breast cancer). Multilevel discrete time hazard models were used to estimate the effect of false-positive results on reattendance, and the odds ratios of non-attendance for the women's personal characteristics studied.

## RESULTS

Figure 1 shows how the overall probability of reattendance increased with the number of completed screening participations. At the second screening was 81.7% while at the seventh screening was 95.6%. Shown in Figure 2 is the effect of false-positive mammograms on the probability of attendance obtained from the regression model adjusted for all other study factors. Women not experiencing a false-positive result were more likely to return for the following screening invitation. The difference in the probability of reattendance among women with and without a false-positive decreased with the number of screening participations completed. Table 1 shows the adjusted odds ratios (OR) of the association between the women related variables and the risk of failing to participate in the following screening invitation obtained from the adjusted regression model. The risk of non-attendance was higher in the oldest women, women not attending their first screening invitation, and those with previous invasive procedures.

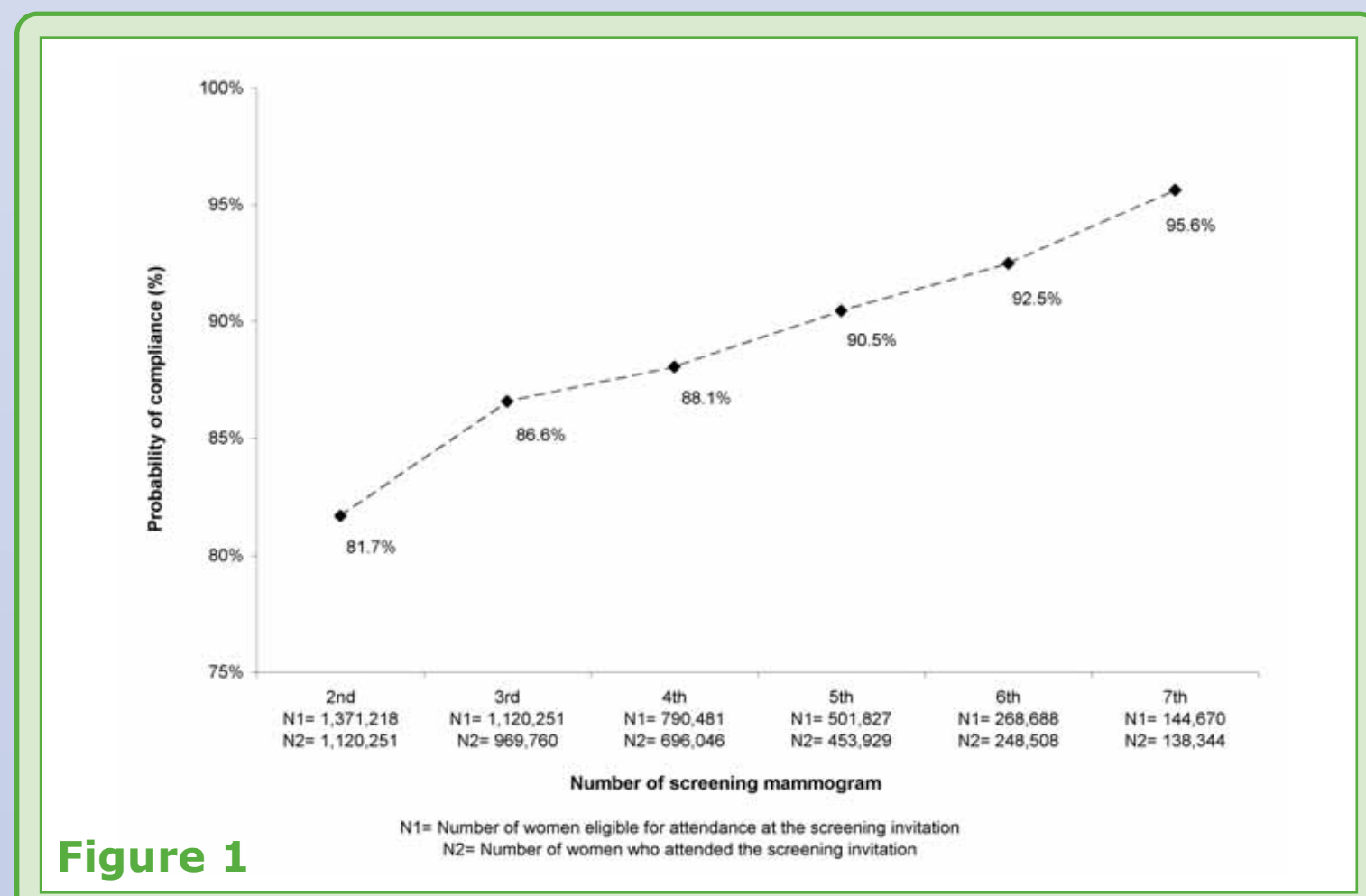


Figure 1

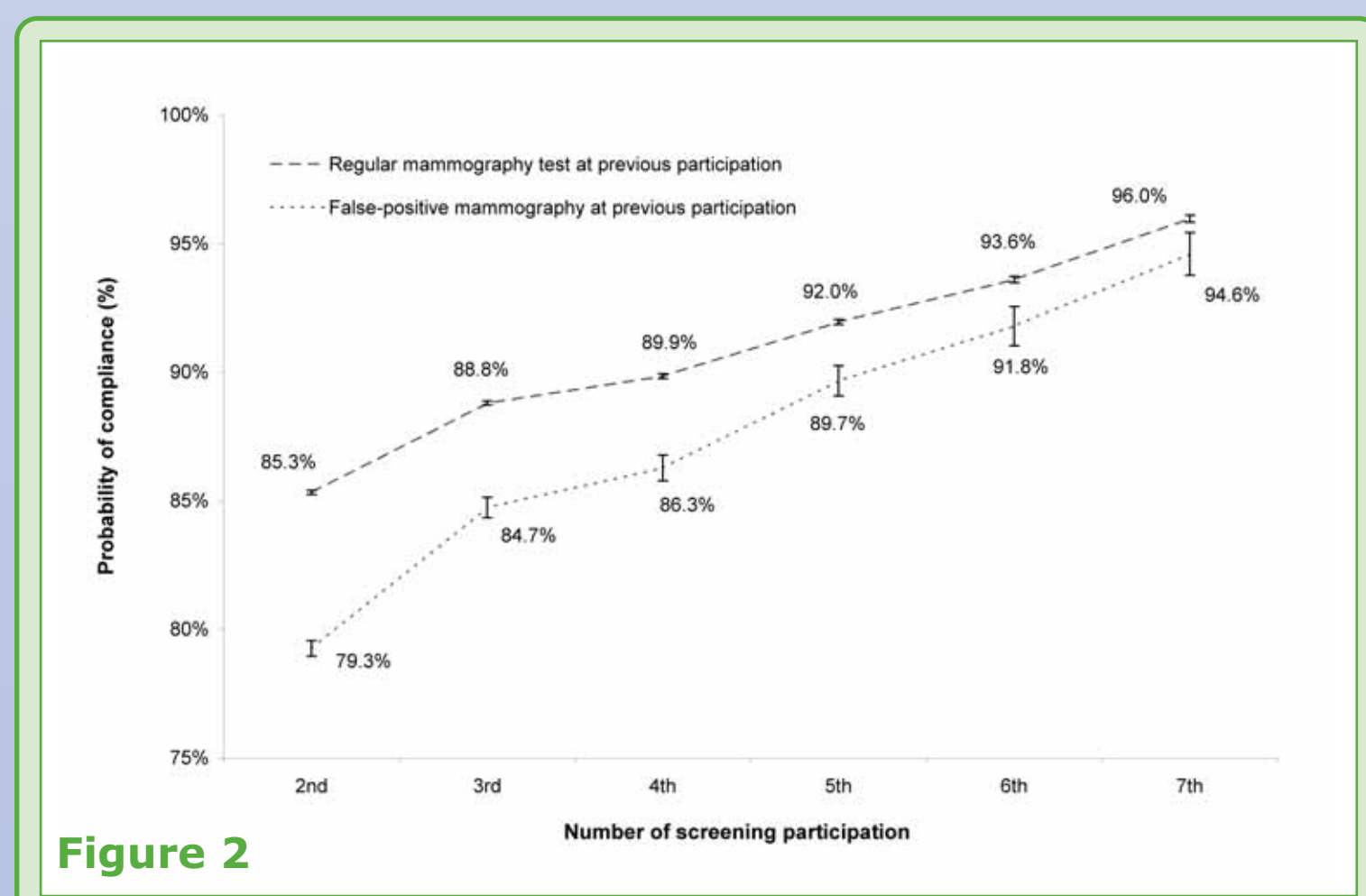


Figure 2

Table 1. Estimated odds ratios (OR) from the multiple regression model for the association (unadjusted and adjusted) between women's characteristics and reattendance at the following screening invitation. (N= 2,660,155)

Screening Mammograms	Risk of leaving screening	
	Univariate analysis (unadjusted OR, 95% CI) <sup>a</sup>	Multivariate analysis (adjusted OR, 95% CI) <sup>b</sup>
<b>Age at screening</b>		
44-49	Ref.	Ref.
50-54	1.02 (1.01, 1.03) *	0.91 (0.89, 0.92) *
55-59	1.181.353	1.04 (1.03, 1.06) *
60-64	1.079.044	2.72 (2.69, 2.75) *
65-69	437.093	8.61 (8.50, 8.71) *
<b>Attended first invitation</b>		
Yes	4.061.766	Ref.
No	483.580	1.19 (1.18, 1.20) *
<b>HRT</b>		
No	2.857.354	Ref.
Yes	297.624	0.79 (0.78, 0.80) *
<b>Menopause</b>		
Menopausal	2.262.797	Ref.
Premenopausal	575.965	0.62 (0.61, 0.62) *
<b>Previous Invasive Procedure</b>		
No	2.595.815	Ref.
Yes	193.202	1.09 (1.07, 1.11) *
<b>Familial Breast Cancer</b>		
No	2.891.655	Ref.
Yes	212.662	1.00 (0.99, 1.02)

Due to missing data in the women's related variables the number expresses the maximum number of available information.  
 HRT hormone replacement therapy, Menopause pre/peri-menopausal or menopausal status, Previous invasive procedure personal previous invasive procedure, Familial breast cancer first degree familial history of breast cancer.  
 \* Significant at the 95% Confidence level. An odds ratio (OR) >1 indicates that women with that characteristic are more likely to fail to return to the following screening invitation.  
<sup>a</sup> Analysis adjusted by women's screening participation, screening period (years), and radiology unit (random effect).  
<sup>b</sup> Multivariate analysis adjusted by women's screening participation, screening period (years), radiology unit (random effect), interaction between false-positives and the women's screening participation, and all other factors in the table.

## CONCLUSION

We evaluated attendance at breast cancer screening and the causes related to lower adherence. We found that false-positive results and other women's personal characteristics affected the re-attendance to subsequent screening invitations. Because repeated sequential screening is essential to reduce breast cancer mortality, understanding the factors modifying reattendance is important when the risks and benefits of screening are analyzed. This information could be useful to provide the best available information to women invited to participate and to improve adherence to subsequent screenings.