

IS BREAST CANCER SCREENING A USEFUL TOOL TO TACKLE HEALTH INEQUALITIES? A STUDY IN EMILIA-ROMAGNA REGION

B. Pacelli¹, E. Di Felice², S. Cavuto², N. Caranci¹, L. Cisbani¹,
M.P. Fantini³, R. De Palma¹, M. Biocca¹, S. Candela²

- 1 *Agenzia Sanitaria e Sociale regionale Emilia-Romagna*
- 2 *Unità di Epidemiologia, Azienda USL Reggio Emilia*
- 3 *Dipartimento di Medicina e Sanità Pubblica, Università di Bologna*



Introduction (1/2)

- Differences in breast cancer (BC) survival related to socioeconomic status (SES) are well documented
(Gordon 2003, Bouchardy 2006, Halming 2008)
- The role of BC screening in tackling SES disparities is part of an open debate

(Bouchardy 2006, Lowman 2007, Verkooijen 2009)

Introduction (2/2)

- In Emilia-Romagna region a mass breast cancer screening was introduced in the middle of '90s for all women aged 50-69 and became full implemented in 2001
- reached attendance 70%

Objective

- to evaluate whether a mass screening program is able to reduce SES related differences in breast cancer survival

Methods (1/2)

- Eligible cases: all women with unique infiltrating tumour diagnosed between 1997 and 2003 and residing in Emilia-Romagna

- Data: BC Registry (BCR) linked with:
 - Hospital Discharge Register → previous tumour cases
 - Mortality Registry → vital status and cause of death
 - Census' individual database → individual SES data
 (poster P142 in "inequalities, vulnerable groups")

- SES variable: level of education (low, medium, high)

- Valuation of selection bias by comparison between linked and not linked women

Methods (2/2)

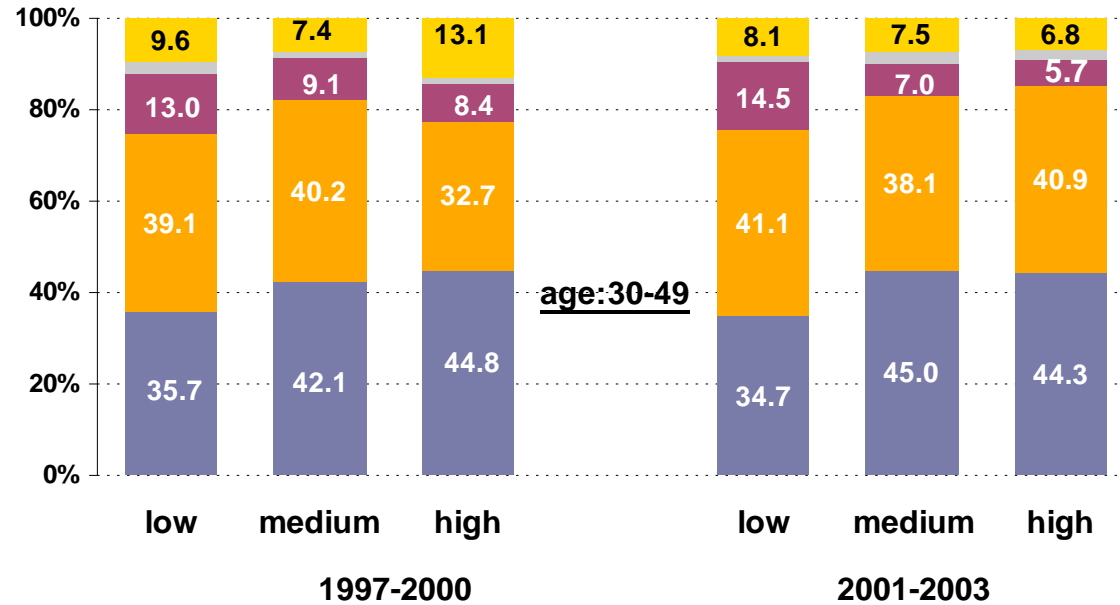
- primary outcome: specific 5-year survival
- analysis:
 - Descriptive: stage at diagnosis by education level
 - Kaplan-Meier survival
 - Log-rank test
 - Cox hazard ratio (HR)
 - stratifying for:
 - age groups: 30-49, 50-69 (screening target population)
 - incidence periods (1997-2000, 2001-2003)
 - adjusting for age and stage at diagnosis



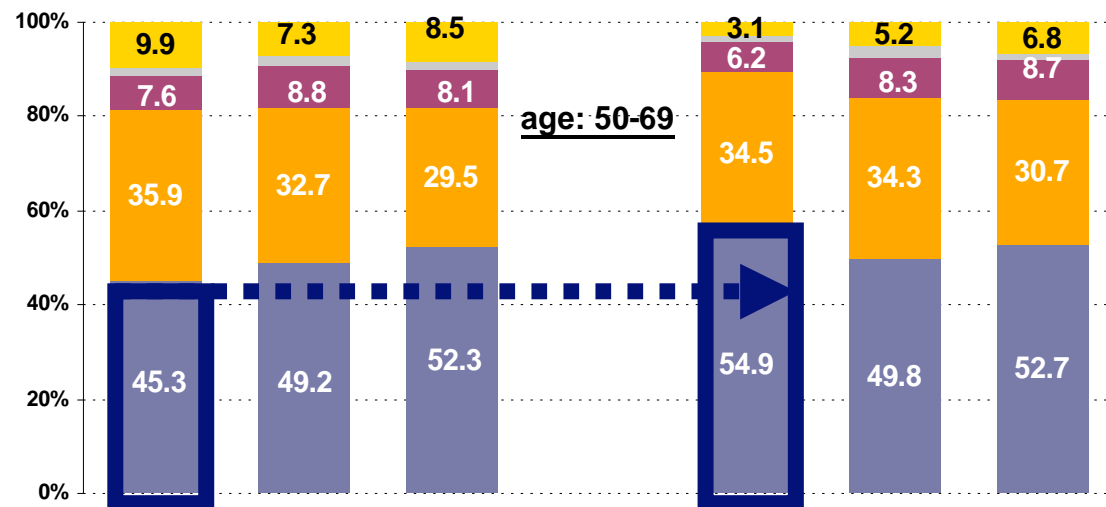
linked cases' representativeness

- 14,689 (63.3%) of eligible cases were linked
- no significant difference between linked and not linked women by stage and survival

Stage at diagnosis and education



Stage at diagnosis: I II III IV not staged/unknown



education and BC survival (1/2)

5-years breast cancer (BC) survival (%)

age: 30-49

Education	1997-2000			2001-2003		
	%	p	Δ vs high	%	p	Δ vs high
low	86.8%	0.04	-7.5%	89.4%	0.53	-3.2%
medium	92.1%		-2.2%	92.2%		-0.4%
high	94.2%		-	92.6%		-

age: 50-59

Education	1997-2000			2001-2003		
	%	p	Δ vs high	%	p	Δ vs high
low	86.9%	0.01	-4.6%	94.6%	0.19	1.8%
medium	91.3%		-0.1%	91.5%		-1.4%
high	91.4%		-	92.9%		-

education and BC survival (2/2)

Hazard ratios of high and medium vs low education

age: 30-49

Education	1997-2000				2001-2003			
	not adjusted		adj. for age and stage		not adjusted		adj. for age and stage	
	HR	IC	HR	IC	HR	IC	HR	IC
low	1		1		1		1	
medium	0.59	0.34-1.03	0.82	0.46-1.45	0.72	0.40-1.31	0.65	0.34-1.21
high	0.42	0.21-0.84	0.68	0.33-1.40	0.69	0.32-1.49	0.68	0.31-1.50

age: 50-59

Education	1997-2000				2001-2003			
	not adjusted		adj. for age and stage		not adjusted		adj. for age and stage	
	HR	IC	HR	IC	HR	IC	HR	IC
low	1		1		1		1	
medium	0.64	0.47-0.86	0.56	0.41-0.76	1.58	0.88-2.84	1.28	0.71-2.32
high	0.63	0.43-0.93	0.63	0.42-0.93	1.31	0.70-2.47	1.23	0.64-2.36

Conclusions (1/2)

Strengths

- integrated dataset from different sources
- cohort approach with individual SES information
- association between SES and BC survival

Weaknesses

- not available data of actual pre-screening period

Conclusions (2/2)

- In the ongoing debate about the effectiveness of screening in reducing mortality (Esserman 2009, McPherson 2010) our results suggest that a mass screening program is able to level out the SES inequalities in bc survival
- This potential benefit of a mass screening program was recently highlighted (Pàlencia 2010)



□ Thanks for your attention!