Socioeconomic position and breast cancer survival in Switzerland

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BACKGROUND & OBJECTIVES

Breast carcinoma is the most common cancer and the leading cause of cancer death in Swiss women. In Switzerland, each year around 5,700 patients are newly diagnosed with breast cancer and approximately 1,400 women die of the disease (1). Tumour stage at presentation remains one of the major prognostics factors and women with early-stage breast cancer are expected to have excellent survival rates. Several studies outside of Switzerland have reported negative associations between socioeconomic position (SEP) and breast cancer stage at presentation (2,3) as well as socioeconomic inequalities in survival after breast cancer diagnosis (3,4). This study investigates the influence of stage at presentation on socioeconomic inequalities in Swiss women.

DATA & METHODS

The study used population-based breast cancer incidence data 2001-2008 (women aged 30-84 years, N=16,488) from five Swiss cantonal cancer registries linked to the Swiss National Cohort. Follow-up and cause-specific death information was available until the end of 2013. Stage at diagnosis was classified by SEER summary stage (localized, regional, distant). We used highest education level attained to estimate SEP (compulsory or less, secondary education, tertiary education). To assess the association between SEP and risk of breast cancer death, competing risk regression models were performed including the following covariates: *Model 1* - age at diagnosis (<50, 50-70, 70-84 years), canton with organized screening program (yes/no), civil status (single, married, divorced, widowed), nationality (Swiss, non-Swiss); *Model 2* – Model 1 plus stage at presentation.

RESULTS

Patients characteristics by SEP

	Low SEP		Middle SEP		High SEP	
	N	column %	N	column %	N	column %
Stage at presentation						
Local	2,538	51.5%	4,695	53.4%	1,550	56.0%
regional	1,793	36.4%	3,291	37.4%	996	36.0%
Distant	269	5.5%	399	4.5%	110	4.0%
unknown stage	330	6.7%	406	4.6%	111	4.0%
Age at presentation						
<50 years	613	12.4%	1,984	22.6%	828	29.9%
50-69 years	2,278	46.2%	4770	54.3%	1,582	57.2%
70-84 years	2,039	41.4%	2,037	23.2%	357	12.9%
Canton with organized screening program						
yes	2,600	52.7%	3,828	43.5%	1,588	57.4%
no	2,330	47.3%	4,963	56.5%	1,179	42.6%
Civil status						
Single	391	7.9%	1,127	12.8%	535	19.3%
Married	2,871	58.2%	5,562	63.3%	1,681	60.8%
widowed	1,112	22.6%	927	10.5%	177	6.4%
divorced	556	11.3%	1,175	13.4%	374	13.5%
Nationality						
Swiss	3,835	77.8%	7,981	90.8%	2,238	80.9%
non-Swiss	1,095	22.2%	810	9.2%	529	19.1%
Vital Status at end of follow-up						
Alive	3,244	65.8%	6,866	78.1%	2,267	81.9%
Dead	1,595	32.3%	1,840	20.9%	446	16.1%
lost-to-follow-up	91	1.9%	85	2.0%	54	2.0%
Total N row %	**4,930**	**29.9%**	**8,791**	**53.3%**	**2,767**	**16.8%**

Risk of death from breast cancer

	Model 1		Model 2	
	Subhazard ratio	(95%CI)	Subhazard ratio	(95%CI)
SEP				
High SEP (ref.)				
Middle SEP	1.10	[0.97-1.26]	1.04	[0.90-1.20]
Low SEP	1.39	[1.20-1.60]	1.28	[1.10-1.50]
Stage at presentation				
local (ref.)				
regional	-	-	4.14	[3.68-4.66]
distant	-	-	26.72	[23.20-30.76]
Age at presentation				
50-69 years (ref.)				
30-49 years	0.82	[0.72-0.93]	0.75	[0.66-0.86]
70-84 years	1.46	[1.32-1.62]	1.30	[1.16-.1.46]
Organized screening				
yes (ref.)				
no	1.23	[1.13-1.35	1.19	[1.08-1.31]
Civil status				
married (ref.)				
single	1.24	[1.09-1.41]	1.13	[0.98-1.30]
widowed	1.09	[0.96-1.24]	1.08	[0.93-1.25]
divorced	1.01	[0.88-1.16]	0.94	[0.81-1.09]
Nationality				
Swiss (ref.)				
Non-Swiss	0.83	[0.72-0.95]	0.80	[0.69-0.92]

Adjusted SHR were increased in women with compulsory or less education (SHR 1.39, 95%CI 1.20-1.60) and women with secondary education (SHR 1.10, 95%CI 0.97-1.26) compared to women with tertiary education (model 1). After additional adjustment for stage at presentation (model 2), SHRs lowered to 1.28 (95%CI 1.10-1.50) for women with secondary education and 1.04 (95%CI 0.90-1-20) for women with tertiary education. In the fully adjusted model, later stage at presentation was strongly associated with elevated SHRs (regional stage: SHR 4.14, 95%CI 3.68-4.66; distant stage: SHR 26.72, 95%CI 23.20-30.76). Compared to women aged 50-69 years, women aged 70-84 years showed increased SHR (SHR 1.30, 95%CI 1.16-1.46). For women aged 30-49 years reduced SHR were observed (SHR 0.75, 95%CI 0.66-0.86). Living in a canton without organized screening was associated with increased SHR (SHR 1.19, 95%CI 1.08-1.31) even after adjustment for stage. Non-Swiss residents showed a decreased SHR of 0.80 (95%CI, 0.69-0.92). We observed no significant effects for civil status in the fully adjusted model.

CONCLUSIONS

The results indicate social inequalities in survival for women diagnosed with breast cancer in Switzerland. Importantly, these inequalities cannot be explained by socioeconomic differences in stage at presentation.

SELECTED REFERENCES

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