

# Screening mammographies in Switzerland: what makes female and male physicians prescribe them?<sup>1</sup>

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## Summary

*Question under study:* Physicians play a key role in motivating women to undergo mammography screening. In 1998 we assessed Swiss physicians' attitudes to mammography screening and their prescription behaviour in this regard.

*Methods:* All female physicians and every second male physician aged 50–69 who were either not board-certified or board-certified in general practice, internal medicine, or obstetrics/gynaecology were sent a questionnaire. The response rate was 50% and thus 738 questionnaires were included in this study. Of the study population 39% were female and 61% male physicians. The distribution of professional backgrounds was: 27% board-certified general practitioners; 23% board-certified internists; 11% board-certified gynaecologists; 39% not board-certified.

*Results:* 55% of all study participants were in favour of a mammography screening programme for women aged over 50 in Switzerland, but breast self-examination and clinical breast examination were judged to have a more positive impact on breast cancer survival. Among clinically practising physicians, 22% reported generally prescribing biannual screening mammographies for women

aged 50–69. Irrespective of other determinants, physicians from the Italian- and French-speaking parts of Switzerland prescribed screening mammographies more often than their colleagues from the German-speaking part (odds ratio [OR] 2.5; 95% confidence interval [CI] 1.5–4.2). Clinical practice in obstetrics/gynaecology (OR 2.4; CI 1.3–4.2) and a self-reported high level of knowledge concerning mammography screening (OR 1.9; CI 1.1–3.2) were also positively associated with the prescription of screening mammography.

*Conclusions:* Since mammography screening programmes exist in only three French-speaking cantons of Switzerland (VS; VD; GE), the gap in prescription of screening mammographies between French/Italian- and German-speaking regions must be narrowed to prevent a higher prevalence of side effects from opportunistic screening among German-speaking women. There is a need to educate physicians and the political community regarding the risks and benefits of mammography screening.

*Keywords:* mammographic screening; physicians; prescription; attitude

## Introduction

Breast cancer is the most common cancer in women. One in twelve women in Switzerland will develop breast cancer over their lifetime [1]. Most breast cancer risk factors identified so far are poor targets for primary prevention of the disease [2]. Early detection therefore plays a crucial role in the fight against breast cancer. Mammography is the only screening method clearly associated with a reduction in breast cancer mortality in well-designed studies. Mortality reductions of up to 30% have been identified in eight randomised intervention studies in women aged 50 to 65 years who were screened at 1–3-year intervals [3, 4].

An effective reduction in breast cancer mortality associated with both an improved quality of life in breast cancer patients and a reduced risk of side effects [5, 6] in screened women can only be achieved with quality-controlled screening programmes. In Switzerland women aged 50 and over undergoing biannual mammographic screening in the context of a programme fulfilling the legal quality control criteria [7] are reimbursed by their health insurance schemes. Since such programmes are available in only three cantons (Vaud, Geneva, Valais), women from other cantons have access only to opportunistic screening and are thus faced

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with an increased risk of side effects [8]. In fact, according to the data of the 1997 Swiss Health Survey, more women in the French-speaking part undergo mammography than in the German-speaking region [9]. Physicians in general – but most importantly physicians in cantons lacking screening programmes – who provide care to peri- and postmenopausal women play a crucial role in educating women about screening mammography. Their central role in motivating women for participation in mammography screening programmes has been demonstrated by several studies [10–15]. Asked for the two most common reasons why they had not had a mammography, women stated, first, that they did not know they

actually needed an exam, and, second, that the exam was not recommended to them by their physician [14].

We therefore investigated how male and female physicians in Switzerland relate to mammography screening. First, we investigated their attitude to the procedure. We focused on the age group between 50 and 65, because our second interest was in the personal mammography screening behaviour of female physicians. Third and most importantly, we assessed the screening mammography prescription rate and how it was influenced by attitude, personal screening behaviour and other factors.

## Methods

The cross-sectional study was based on a self-administered questionnaire sent to all practising female (n = 529) and 50% of all practising male physicians (n = 1001) aged 50 to 65 years who were either not board-certified or board-certified in general practice, internal medicine, or obstetrics/gynaecology. Selection of this age category was based on our interest in assessing female doctors' personal screening behaviour (age at which mammography screening is generally recommended). The professional backgrounds selected chiefly cover the medical service provided to peri- and postmenopausal women in Switzerland. Since many female physicians practice medicine without being board-certified, we included this group in the study. Name and address (n = 1530) were provided by the Swiss Medical Association (FMH). The first mailing was sent out in November 1998, followed by two reminders in

December 1998 and January 1999. Questionnaires returned before May 1999 were included in the study. 36 participants had to be excluded from the study (address unknown n = 5; died n = 1; no longer practising n = 8; abroad n = 2; professional background different from those listed above n = 20). The response rate was 58% for women and 46% for men. 15 questionnaires were excluded (demographic information missing n = 2, or unrealistic n = 13). The study population is representative of the base population with regard to age, gender, region and board-certification (table 1). We collected information on demographic variables, workplace, attitude to and prescription of mammography screening and osteoporosis prevention (manuscript in preparation). Female physicians were also questioned about their personal breast cancer screening strategies.

Data was anonymised and abstracted in *Epi*

**Table 1**  
Comparison of base population and study population.

Characteristics		base population <sup>1</sup>			study population		
		female	male	total	female	male	total
Region	German	69.4%	69.1%	69.2%	75.2%	74.6%	74.8%
	French	24.6%	26.2%	25.6%	23.8%	22.8%	23.2%
	Italian	2.5%	3.3%	3.0%	1.0%	2.7%	2.0%
	abroad	3.6%	1.4%	2.2%			
Board-certification	Gynaecology/Obstetrics	11.3%	12.1%	11.8%	8.3%	13.1%	11.3%
	General Practice	9.6%	29.8%	22.8%	11.3%	38.0%	27.4%
	Internal Medicine	13.6%	27.6%	22.7%	13.8%	28.6%	22.8%
	other <sup>2</sup>	0%	1.0%	0.8%			
	total board-cert.	34.6%	70.4%	58.0%	33.4%	79.7%	61.5%
	not board-cert.	65.4%	29.6%	42.0%	66.6%	20.3%	38.5%
Age	–55	53.7%	52.1%	52.7%	52.4%	55.1%	54.0%
	–60	30.4%	28.9%	29.4%	32.1%	28.4%	29.9%
	–65	14.9%	17.4%	16.5%	15.5%	16.5%	16.1%
	–70	0.9%	1.6%	1.4%			

<sup>1</sup> In order to assess the representativity of the study population the characteristics listed in the table were provided by the Swiss Medical Association (FMH)

<sup>2</sup> Infectiology n = 3, Child and Adolescent Psychiatry n = 1, Medical Genetics n = 1, Med. Radiology/Radio-Oncology n = 1

*Info* (Version 6.03, Januar 1996) and statistically analysed in *STATA* (Statistical Software, StataCorp 1997, Release 6.0). We first investigated the frequency distribution of answers related to attitude and personal behaviour with regard to mammography screening. *Attitude* refers to the question whether the participant is in favour of health insurance coverage for mammography screening for women in Switzerland after age 50 (Appendix, Question 1). *Personal screening behaviour* refers to the question whether female physicians undergo mammography screening themselves on a regular basis (Appendix, Question 2). *Prescription behaviour* refers to the question whether the participant routinely prescribes screening mammographies for patients in specified age categories (Appendix, Question 3).

We first investigated the determinants of attitude, personal screening behaviour and prescrip-

tion behaviour in separate statistical models. In a second step we assessed the association of the major determinants identified in step 1, and of attitude and personal screening behaviour, with prescription behaviour in a multivariate logistic regression model. Separate models were run for all participants combined (general model) and for male and female physicians separately. The models were restricted to physicians reporting they were treating patients at the time of the interview. Independent variables included in the models were: age, gender (general model only), language region, board-certification, gynaecological activity, self-reported level of knowledge concerning mammography screening, attitude, belief in the life-prolonging effect of mammography screening, estimation of patient knowledge (general model only), and personal screening behaviour (model for female physicians only).

**Table 2**

Sociodemographic characteristics of male and female physicians.

		female		male		total		significance
		n	%	n	%	n	%	P <sup>1</sup>
Total		290	39.3	448	60.7	738	100.0	
Region	German	218	75.2	334	74.6	552	74.8	n.s. <sup>2</sup>
	French	69	23.8	102	22.8	171	23.2	
	Italian	3	1.0	12	2.7	15	2.0	
Age (years)	<55	152	52.4	247	55.1	399	54.0	n.s. <sup>2</sup>
	55-59	93	32.1	127	28.4	220	29.9	
	>59	45	15.5	74	16.5	119	16.1	
Board-certification	board-certified:	97	33.4	357	79.7	454	61.5	<0.001 <sup>3</sup>
	specialty:							
	Obstetrics/Gynaecology	24	8.3	59	13.1	83	11.3	0.04 <sup>4</sup>
	General Practice	33	11.3	170	38.0	203	27.4	
	Internal Medicine	40	13.8	128	28.6	168	22.8	
	not board-certified:	193	66.6	91	20.3	284	38.5	
Practising medicine	yes	257	88.6	432	96.4	689	93.4	<0.001 <sup>5</sup>
	full-time	122	42.1	415	92.6	537	72.8	
	part-time	135	46.6	17	3.8	152	20.6	
	no	29	10.0	14	3.1	43	5.8	
	no reply	4	1.4	2	0.5	6	0.8	
	total	290	100	448	100	738	100	
Workplace <sup>5</sup>	private practice	186	72.4	356	82.4	542	78.7	n.s. <sup>2</sup>
	hospital	52	20.2	79	18.3	131	19.0	
	other	49	19.1	35	8.1	84	12.2	
	no reply	9	3.5	46	10.7	55	8.0	
	total	257	100	432	100	689	100	

<sup>1</sup> p( $\chi^2$ ) for the comparison between female and male physicians

<sup>2</sup> n.s. = not significant (p > 0.05)

<sup>3</sup> Comparison between board-certified vs. not board-certified

<sup>4</sup> Contrast between the specialties of board-certification

<sup>5</sup> the p-value is based on combining 'no reply' and 'no' in a single category

<sup>6</sup> these numbers only refer to participants who were practising medicine at the time of interview (n = 689). Multiple replies were allowed.

## Results

738 questionnaires were included in the analysis. Of the study population 39% were female and 61% male physicians (table 2). Three-quarters of participants practised in the German-speaking region, about one quarter in the French-speaking region, and a very small percentage in the Italian-speaking region. The participants' mean age was 55 years. 33% of female and 80% of male physicians were board-certified ( $p < 0.001$ ). Among board-certified participants 45% were general practitioners, 37% internists, and 18% gynaecologists. There was a statistically significant gender difference in the distribution of specialties among board-certified participants ( $p[\chi^2] = 0.04$ ). 67% of female and 20% of male physicians were not board-certified. Their specialty area was chiefly general practice and psychiatry. Overall, 93% of participants and about half of all female physicians were practising medicine at the time of interview. Among those, 79% were in private practice.

Breast self-examination and clinical breast examination ranked higher than mammography screening in the physicians' judgement of the respective impact of different breast cancer screening methods on survival (table 3).

57% of female and 54% of male physicians were in favour of health insurance refund for screening mammography (table 4; Appendix, Question 1).

More female respondents had "no opinion" (17% vs. 10%), whereas more males were against refund (34% vs. 23%). Arguments against screen-

ing mammography were listed in the following order: (1) false reassurance in the light of a negative result, (2) unfavourable cost/benefit ratio, (3) too many follow-up procedures, (4) too many false-positive results. In bivariate analysis a statistically significant positive association with approval of mammography screening programmes in Switzerland was found for respondents practising in French- or Italian-speaking regions (83% vs. 46%,  $p < 0.001$ ); practising without board-certification (58% vs. 53%,  $p < 0.001$ ); practising in gynaecology (69% vs. 53%,  $p = 0.009$ ); with a self-reported high level of knowledge of mammography screening (65% vs. 39%,  $p < 0.001$ ); and with a belief in the life-prolonging effect of mammography screening (88% vs. 2%,  $p < 0.001$ ).

All female physicians were at the age at which mammography screening is generally recommended by experts. 54% reported that they underwent regular screening mammographies (Appendix, Question 2). Differences were again noted between language regions (75% in the French/Italian-speaking parts of Switzerland vs. 38% in the German-speaking part;  $p < 0.001$ ); between different self-reported levels of knowledge concerning mammography screening (52% vs. 35% for high and low levels self-reported knowledge respectively;  $p = 0.002$ ); between differences in belief regarding improved survival due to mammography screening (70% vs. 9%,  $p < 0.001$ ); and between differences in attitude to mammography

**Table 3**

Percentage of female and male physicians who think of screening mammography, breast self-examination and clinical breast examination as having a life-prolonging effect.<sup>1</sup>

	female		male		total	
	n	%	n	%	n	%
1. Breast self-examination	222	76.6 <sup>2</sup>	332	74.1 <sup>2</sup>	554	75.1
2. Clinical breast examination	213	73.4 <sup>3</sup>	304	67.8 <sup>3</sup>	517	70.0
3. Screening mammography	205	70.7 <sup>4</sup>	299	66.7 <sup>4</sup>	504	68.3

<sup>1</sup> Question "How effective is the life-prolonging effect of screening mammography, breast self-examination, and clinical breast examination?" Possible replies: "ineffective", "potentially ineffective", "potentially effective", "effective". The table lists the sum of "potentially effective" and "effective" replies.

<sup>2</sup>  $p(\chi^2)$  for the comparison of female vs. male physicians = 0.11. The "(potentially) ineffective" replies were compared to the "(potentially) effective" replies.

<sup>3</sup>  $p(\chi^2)$  for the comparison of female vs. male physicians = 0.005. The "(potentially) ineffective" replies were compared to the "(potentially) effective" replies.

<sup>4</sup>  $p(\chi^2)$  for the comparison of female vs. male physicians = 0.32. The "(potentially) ineffective" replies were compared to the "(potentially) effective" replies.

**Table 4**

Attitude of female and male physicians towards the introduction of mammography screening for all women after age 50 in Switzerland.<sup>1</sup>

	female		male		total		significance P <sup>2</sup>
	n	%	n	%	n	%	
Yes	165	56.9	241	53.8	406	55.0	<0.001 <sup>3</sup>
No	67	23.1	154	34.4	221	30.0	
No opinion	50	17.2	43	9.6	93	12.6	
No reply	8	2.8	10	2.2	18	2.4	
Total	290	100	448	100	738	100	

<sup>1</sup> Appendix, question 1

<sup>2</sup>  $p(\chi^2)$  for the comparison of female vs. male physicians

<sup>3</sup> In calculating this p-value the categories 'no opinion' and 'no reply' were combined;

$p(\chi^2)$  for the comparison yes vs. no after exclusion of 'no opinion' and 'no reply':  $p = 0.011$ .

**Table 5**  
Prescription of screening mammographies in the clinically active study population.<sup>1</sup>

General prescription of screening mammographies	female		male		total		
	n	%	n	%	n	%	
Total	172	29.4	414	70.6	586	100	
Yes <sup>2</sup>	70	40.7	150	36.2	220	37.5	
	for age category						
<40 years	18	10.4	67	16.1	85	14.5	
40-50 years	35	20.3	99	23.8	134	22.8	
50-70 years	69	40.0	142	34.1	211	35.9	
Interval <sup>3</sup>	annually	6	3.5	10	2.4	16	2.7
	biannually	45	26.1	85	20.4	130	22.1
	triannually	14	8.1	36	8.6	50	8.5
	less often	4	2.3	10	2.4	14	2.4
	no reply	0	0.0	1	0.2	1	0.2
	>70 years	42	24.4	106	25.4	148	25.2
No <sup>2</sup>	87	50.6	253	61.1	340	58.0	
No reply	15	8.7	11	2.7	26	4.4	

<sup>1</sup> Appendix, question 3

<sup>2</sup>  $p(\chi^2)$  female vs. male physicians: «yes» versus «no» versus «no reply»:  $p(\chi^2) = 0.001$  «yes» versus «no»:  $p(\chi^2) = 0.109$

<sup>3</sup> Screening interval for women between ages 50 and 70 years. The gender difference with regard to screening intervals is not significant.

screening (63% vs. 22%,  $p < 0.001$ ). Personal screening behaviour was not associated with gynaecological activity, board-certification, hormone replacement therapy or a positive family history of breast cancer.

To investigate the prescription rate for screening mammography and its determinants we included only participants who were actually treating patients. We excluded participants who were not practising medicine at the time of interview, who were working on a theoretical aspect of medicine, or who did not answer questions relating to prescription. The clinically active group of physicians made up 79% of the study population and consisted of 172 (29%) female and 414 (71%) male physicians.

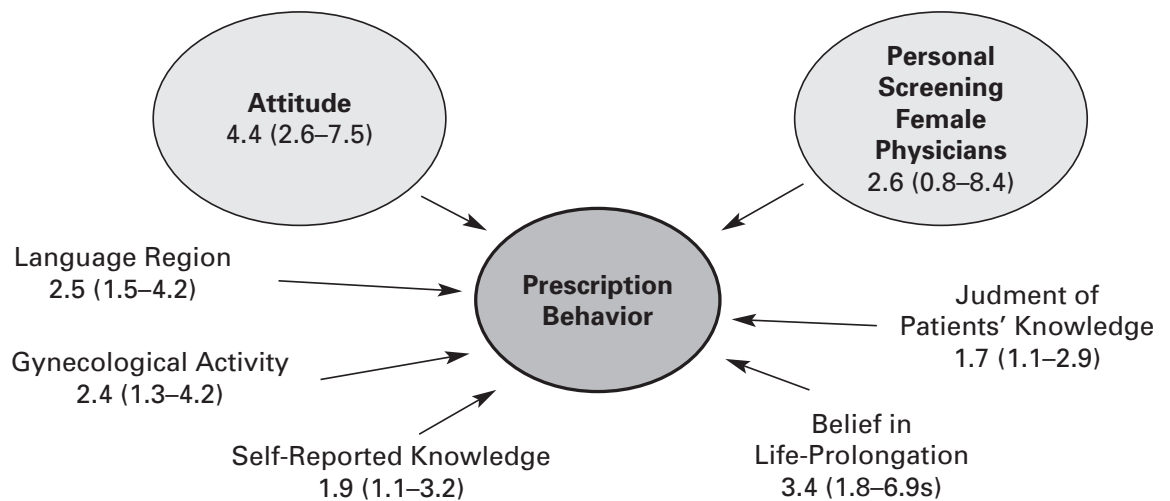
Overall, 38% of participants (41% female and 36% male physicians) reported that they generally recommended screening mammography to their patients (table 5, Appendix, Question 3). These participants were then asked about prescription behaviour with regard to specific patient age categories. 22% (26% female and 20% male physicians) prescribed screening mammographies biannually for all women aged 50-70 years, in agreement with general recommendations in Switzerland. Six percent of clinically active participants reported that they would even try to prevent asymptomatic patients from undergoing mammography screening because of its potential side effects. Reasons for not recommending mammography screening were ranked as follows: beneficial effect on overall survival not proven; beneficial effect on the rate of breast-conserving surgery not proven, and low acceptance among patients.

We investigated the association of sociodemographic factors, attitude and personal screening behaviour with the likelihood of prescribing screening mammography in a multivariate model. The following variables were identified as independent and statistically significant predictors (figure 1): a positive attitude towards mammography screening (OR 4.40, 95% CI 2.6-7.5) and a belief in its life-prolonging effect (OR 3.43, 95% CI 1.8-6.9) were positively associated with the likelihood of prescribing screening mammography. Physicians practising in the French- or Italian-speaking region were more likely to prescribe screening mammographies irrespective of other predictors (OR 2.47, 95% CI 1.5-4.2). The same was true of physicians practising gynaecology, irrespective of board-certification (OR 2.36, 95% CI 1.3-4.2). Male and female physicians with a high self-reported level of knowledge concerning mammography screening prescribed it more often (OR 1.85, 95% CI 1.1-3.2), as did physicians who considered their patients to be well informed (OR 1.73, 95% CI 1.1-2.9). Female gender and younger age were both positively associated with likelihood of prescribing mammography screening, but not to a statistically significant extent. Stratification of the analysis by gender identified the same predictors of the likelihood of prescribing screening mammography. Female physicians who underwent screening mammographies themselves were more likely to prescribe them for their patients, but the result did not attain statistical significance (OR 2.6, 95% CI 0.8-8.4).



**Figure 1**

Determinants of prescription of screening mammographies in the clinically active study population.



The numbers reflect odds ratios (OR) (95% confidence intervals) for the association of the respective variable with the likelihood of prescribing screening mammographies, adjusted for age and gender as well as for all other determinants in the model:

Attitude towards (see Appendix, Question 1): positive vs. negative/no opinion (reference group)

Language region: French/Italian vs. German (reference group)

Gynaecological activity: yes (board-certified or not board-certified) vs. no (reference group)

Self-reported knowledge of mammography: high/very high level vs. poor/very poor/not reported (reference group)

Belief in life-prolongation (see question in footnote to Table 3): effective/potentially effective vs. ineffective/potentially ineffective (reference group)

Judgement of patients' knowledge: average/high level vs. poor/not reported (reference group)

Personal screening among female physicians (see Appendix, Question 2): yes vs. no/no reply.

All ORs other than for personal screening behaviour of female physicians refer to the general model, including all clinically active female and male physicians. The OR for personal screening behaviour is derived from the model including clinically active female physicians only.

## Discussion

Only 38% of practising male and female physicians reported that they recommended screening mammographies to women after a certain age. Only 22% prescribed them in agreement with Swiss guidelines in terms of starting age (50) and screening interval (biannually). Only half of all participants were in favour of mammography screening programmes and only half of all female physicians underwent mammography screening themselves. Impressive differences between the French/Italian- versus German-speaking regions were observed in all three areas investigated: attitude, personal screening behaviour and likelihood of prescribing mammography. This difference between language regions is also reflected in the results of the most recent Swiss Health Survey (Schweizerische Gesundheitsbefragung 1997): the percentage of women who had ever undergone mammography (including diagnostic mammography) was 25% in the eastern and central parts of Switzerland as opposed to 48% (region of Geneva) and 46% (Ticino) in the western part of the country [9, 16]. These figures mask the positive association between frequency of mammography and social status. To what degree these regional differences reflect differences in the prevalence of mammography screening programmes (only available in the French-speaking region) or more fundamental differences of attitude towards prevention in general

cannot be determined on the basis of our results. It is interesting, though, in this context that in 1996 more family planning services were available in the French-speaking regions, reflecting a stronger interest in sexual and reproductive health [17].

The low prevalence of screening mammography prescription in the age-group of the Swiss physicians included in our study may reflect their uncertainty with regard to the benefit of this screening method in the light of recurrent discussion of this issue [4, 18–20]. The methodology and results of the large randomised intervention studies investigating the association between mammography screening and breast cancer mortality have again been criticised recently in a meta-analysis including only 20% of the available data [18]. The authors argue that small age differences between the intervention groups may have been the result of incomplete randomisation in many of these studies. They thus question the accuracy of the observed average 25% decrease in breast cancer mortality in these studies. Despite being widely publicised, the conclusions of the metaanalysis were immediately criticised by many national and international experts [4, 19, 20]. The observed small age differences between the intervention groups cannot explain the observed difference in breast cancer mortality across the eight large randomised trials. In fact, in countries which intro-

duced mammography screening programmes several years ago statistically significant decreases in breast cancer mortality are now being observed, in agreement with the results of the intervention studies [21–24]. Practitioners must be made aware of this evidence. In our study we have shown that believing in the life-prolonging effect of mammography screening and having a positive attitude towards a Swiss mammography screening programme were positively associated with the likelihood of prescribing mammography, in agreement with the results of previous studies [25, 26].

Being well-informed about mammography has a positive impact on attitudes towards the benefits of this screening method and the likelihood that it will be prescribed [27, 28]. Among the participants in this study, an average of 37% self-reported poor or very poor knowledge in this area. This percentage was lowest for gynaecologists (11%). But both the self-reported level of knowledge and the fact of being a gynaecologist influenced the likelihood of prescribing independently. A higher mammography prescription rate [12, 29, 30] and greater knowledge of breast cancer epidemiology and the benefits of mammography screening [31] among gynaecologists, as opposed to internists or general practitioners, have been reported in previous studies. Since postmenopausal women are less likely to see a gynaecologist [32], they are less likely to have a screening mammography prescribed for them. According to Beaulieu, 30–40% of all postmenopausal women are either not seeing a physician or not willing to take his/her advice with regard to mammography screening [10]. These women could be reached by screening programmes with personal and regular invitations to all women after age 50. The situation could be additionally improved for these women by educating general practitioners and internists about the benefits of mammography screening. The central influence of physicians with regard to participation rates in mammography screening programmes has been reported in several studies [10–15].

The gender gap with regard to mammography prescription was observed both bivariately and multivariately, but reached statistical significance only in the bivariate analysis. We also observed that female physicians more commonly believed in the life-prolonging effect of clinical breast examination than their male colleagues, but no information is available with regard to gender differences

in the prescription of clinical breast examinations in this study population. A greater likelihood of prescribing screening mammography among female physicians is in agreement with previous studies demonstrating a greater likelihood of having a cancer screening exam among female patients seeing a female physician, especially if the physician is a general practitioner or internist [29, 11, 33, 34]. Female physicians were found to prescribe screening mammographies more frequently than their male colleagues [27].

The gender gap has also been observed in the prescription of clinical breast examinations in some [35] but not all studies [36]. Regular self-examination of one's own breast was found to predict the likelihood of a female physician's prescribing clinical breast examinations, possibly due to improved confidence in accurately performing the procedure [37, 38]. The more favourable attitude of female as opposed to male physicians towards prevention in general has been documented by several studies [26, 28].

The prescription rate of screening mammography for postmenopausal women may be underestimated in this study focusing on 50- to 65-year-old physicians. The younger generation of physicians is absent from the study population and gynaecologists are underrepresented. It is unknown what percentage of postmenopausal women are being counselled with regard to breast cancer prevention by groups of physicians not represented in this study population. Two investigations in the Canton of Geneva in 1991 and 1995 revealed that 90% of all mammographies (including diagnostic mammographies and mammographies for women under 50) were prescribed by gynaecologists, as compared to only 3% by general practitioners [39]. In our study, the likelihood of prescribing mammography was only 60% even among gynaecologists. Overestimation of the prescription rate for screening mammography by our study is a more likely scenario, given the fact that the negative attitude towards this screening method was probably greater among non-participants. In addition, several studies of male and female physicians have documented "physician overreporting" [25, 40, 41]. Finally, the differences between diagnostic and screening mammographies were often misunderstood, as evidenced by indications listed as reasons for recommending screening mammography (i.e. follow-up of positive clinical exam).

## Conclusions

Most women after age 50 have no access to quality-controlled mammography screening programmes in Switzerland. Given the current lack of political and financial support for the establishment of such programmes it is crucial to educate male and female physicians, in particular general practitioners and internists, as well as the political community, on the subject of mammography screening.

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## References

- Levi F, Raymond L, Schüller G et al. Krebs in der Schweiz. Fakten, Kommentare. Schweizerische Krebsliga 1998.
- Kelsey JL. Breast cancer epidemiology: summary and future directions. *Epidemiol Rev* 1993;15:256–63.
- Fletcher SW, Black W, Harris R, Rimer B, Shapiro S. Report of the international workshop on screening for breast cancer. *J Natl Cancer Inst* 1993;85:1644–56.
- Bouchardy C, Raymond L, Levi F, Probst-Hensch N, Tubiana M, de Wolf C. Ist es berechtigt, die Wirksamkeit der mammographischen Früherkennungsuntersuchung in Frage zu stellen? *Schweizerische Ärztezeitung* 2001;82:648–54.
- Hurley SF, Kaldor JM. The benefits and risks of mammographic screening for breast cancer. *Epidemiol Rev* 1992;14:101–30.
- Feig SA, Ehrlich SM. Estimation of radiation risk from screening mammography: recent trends and comparison with expected benefits. *Radiology* 1990;174:639–47.
- Bundesrat. Medienmitteilung Mammographie-Screening, 23. Juni 1999.
- European Guidelines for Quality Assurance in Mammography Screening. European Commission. 2<sup>nd</sup> Edition. June 1996.
- Zemp E, Kessler P. Gesundheit der Frauen. In: BFS. Gesundheit und Gesundheitsverhalten in der Schweiz 97. Neuchâtel 2000:79.
- Beaulieu MD, Béland F, Roy D, Fahrdeav M, Mesert G. Factors determining compliance with screening mammography. *Canad Med Assoc J* 1996;154:1335–55.
- Burns RB, Freund KM, Ash A, Schwartz M, Antab L, Hall R. Who gets repeat screening mammography: the role of the physician. *J Gen Intern Med* 1995;10:520–2.
- Lane DS, Burg MA. Breast cancer screening. Changing physician practices and specialty variation. *NY State J Med* 1990;90:288–92.
- Fox SA, Murata PJ, Stein JA. The impact of physician compliance on screening mammography for older women. *Arch Intern Med* 1991;151:50–6.
- The NCI Breast Cancer Screening Consortium. Screening mammography: a missed clinical opportunity? Results of the NCI Breast Cancer Screening Consortium and National Health Interview Survey Studies. *JAMA* 1990;264:54–8.
- Taplin SH, Urban N, Taylor V, Savarino J. Conflicting national recommendations and the use of screening mammography: Does the physician's recommendation matter? *J Am Board Fam Pract* 1997;10:88–95.
- Wanner Ph, Raymond L, Bouchardy C. Mammography screening and breast self-examination in Switzerland. *Ann Oncol* submitted.
- So B, Glardon MJ, Palasthy E, Schmid M, Schwery G, Zemp E. Ressources en santé accessibles partout. Bestandesaufnahme und Bedarfserhebung bei Familienplanungsstellen und Aids-Hilfen in der Schweiz. ASPFES, Lausanne 1996.
- Gotzsche PC, Olsen O. Is screening for breast cancer with mammography justifiable? *Lancet* 2000;355:129–34.
- De Koning HJ. Assessment of nationwide cancer-screening programmes. *Lancet* 2000;355:80–1.
- Correspondence. *Lancet* 2000;355:747–52.
- Blanks RG, Moss SM, McGahan CE, Quinn MJ, Babb J. Effect of NHS breast screening programme on mortality from breast cancer in England and Wales, 1990–8: comparison of observed with predicted mortality. *BMJ* 2000;321:665–9.
- LETB (Landelijk Evaluatie Team voor bevolkingsonderzoek naar borstkanker). Fracheboud J, Groenewoud JH, Boer R, Broeders MJM, Baan CA, Verbeek ALM, et al. Landelijke evaluatie van bevolkingsonderzoek naar borstkanker in Nederland (VIII) Rotterdam: Erasmus Universiteit Rotterdam, Instituut Maatschappelijke Gezondheidszorg, 2000.
- Nyström L. How effective is screening for breast cancer? Reductions in mortality should not be the only marker for success. *BMJ* 2000;321:647–8.
- Hakama M, Pukkala E, Heikkilä M, Kallio M. Effectiveness of the public health policy for breast cancer screening in Finland: population based cohort study. *BMJ* 1997;314:864–7.
- Contanza ME, Stoddard AM, Zapka JG, Gaw VP, Barth R. Physician compliance with mammography guidelines: barriers and enhancers. *J Am Board Fam Pract* 1992;5:143–52.
- Lurie N, Margolis K, McGovern P, Mink PJ, Slater JS. Why do patients of female physicians have higher rates of breast and cervical cancer screening? *J Gen Intern Med* 1997;12:34–43.
- Haggerty J, Tamblyn R, Abrahamowicz M, Beaulieu MD, Kishchuk N. Screening mammography referral rates for women aged 50 to 69 years by recently-licensed family physicians: physician and practice environment correlates. *Prev Med* 1999;29:391–404.
- Osborn EH, Bird JA, McPhee SJ, Rodnick JE, Fordham D. Cancer screening by primary care physicians: can we explain the differences? *J Fam Pract* 1991;32:465–71.
- Lurie N, Slater J, McGovern P, Ekstrum J, Quam L, Margolis K. Preventive care for women. Does the sex of the physician matter? *N Engl J Med* 1993;329:478–82.
- Taplin SH, Taylor V, Montano D, Chinn R, Urban N. Specialty differences and the ordering of screening mammography by primary care physicians. *J Am Board Fam Pract* 1994;7:375–86.
- Lane DS, Messina CR. Current perspectives on physician barriers to breast cancer screening. *J Am Board Fam Pract* 1999;12:8–15.
- Celentano DD, Shapiro S, Weisman CS. Cancer preventive screening behaviour among elderly women. *Prev Med* 1982;11:454–63.
- Franks P, Clancy CM. Physician gender bias in clinical decision making: screening for cancer in primary care. *Med Care* 1993;31:213–8.
- Kreuter MW, Strecher VJ, Harris R, Kobrin SC, Skinner CS. Are patients of women physicians screened more aggressively? *J Gen Intern Med* 1995;10:119–25.
- Desnick L, Taplin S, Taylor V, Coole D, Urban N. Clinical breast examination in primary care: perceptions and predictors among three specialties. *J Womens Health* 1999;8:389–97.
- Cassard SD, Weisman CS, Plichta SB, Johnson TL. Physician gender and women's preventive services. *J Womens Health* 1997;6:199–207.
- Frank E, Rimer BK, Brogan D, Elon L. U.S. women physicians' personal and clinical breast cancer screening practices. *J Womens Health Gend Based Med* 2000;9:791–801.
- Lane DS, Messina CR. Current perspectives on physician barriers to breast cancer screening. *J Am Board Fam Pract* 1999;12:8–15.
- Lutz J-M, Reith-Chaton J, Fioretta G, Cerny V, Bouchardy C. Survey on mammography frequency in Geneva. *J Med Screen* 2000;7:111–3.



40 Montaña DE, Phillips WR. Cancer screening by primary care physicians: a comparison of rates obtained from physician self-report, patient survey, and chart audit. *Am J Public Health* 1995;85:795-800.

41 Saver BG, Taylor TR, Treadwell SR, Cole WG. Do physicians do as they say? The case of mammography. *Arch Fam Med* 1997;6:543-8.

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## Appendix

### Question 1: Attitude towards mammography screening

“It is planned that after 1.1.1999 biannual screening mammographies for women above age 50 will be refunded by basic health insurance coverage. Do you think that the benefits of mammography screening (reduction of breast cancer mortality; greater likelihood of breast conserving therapy) outweigh its side effects (unnecessary biopsies; prolongation of the time a woman knows about the presence of breast cancer in the absence of a life-prolonging effect) and that regular screening mammographies are justified for women aged 50 and over?”

– → Possible replies: yes – no – no opinion

### Question 2: Personal screening behaviour

“Do you undergo screening mammographies at regular intervals (i.e. preventive mammography in the absence of any symptoms or palpable lesions)?”

- → Possible replies: yes – no
- • if “yes”: starting at what age, and at what screening intervals?
- • if “no”: for what reasons?

### Question 3: Prescription behaviour for screening mammography

“For patients without any indication of breast disease, without palpable lesions, and without a family history of breast cancer, do you **generally** recommend screening mammography after a certain age?”

- → Possible replies: yes – no
- • if “yes”: for what age categories and at what screening intervals?
- • if “no”: for what reasons?

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