

Research paper

Cervical cancer screening among immigrants in Switzerland

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What is known on this subject

- Migrants tend to experience poorer access to healthcare compared with the rest of the population.
- The epidemic of chronic diseases, including cancer, is now considered to be a major challenge among the ethnically diverse populations in Europe.
- Cervical cancer is a case in point. Uptake of the Pap smear is an important element of preventive behaviour and an indicator of healthcare accessibility for women.

What this paper adds

- In this study we investigated cervical cancer screening among different immigrant groups in Switzerland.
- Five of the six immigrant groups demonstrated lower self-reported participation in cervical cancer screening than the Swiss group.
- The introduction of a systematic cervical cancer screening programme tailored to specific immigrant groups such as those from Portugal, the former Yugoslavia and Italy would benefit immigrant women and would be an important step towards equity in the Swiss healthcare system.

ABSTRACT

Cervical cancer screening is cost-effective and reduces both the incidence and mortality of cervical cancer. This study examined variability in the self-reported use of the Papanicolaou (Pap) test among women from six immigrant groups living in Switzerland, a country with an immigrant population of 20.5%.

This study is a secondary analysis of data from the 2002 Swiss Health Survey, a nationwide cross-sectional telephone survey. Descriptive statistical and multivariate analyses were performed to describe the demographic characteristics of a subsample ($n = 9385$). The dichotomous variable of interest was Pap smear, and the main independent variable was

immigrant group. We adjusted for socio-demographic factors and used logistic regression, with Swiss women as the comparison group. 'Immigrant group' also included people of foreign nationality who were born in Switzerland.

The main factors that predicted uptake of the Pap smear were higher income, older age and nationality. Women in five of the six immigrant groups that were analysed were less likely to be screened than Swiss women. Women from Portugal (OR = 4.29), the former Yugoslavia (OR = 2.45), France (OR = 1.96), Spain (OR = 1.79) and Italy (OR 1.53) more frequently said that they had not been tested by a Pap smear compared with women from Switzerland

($P = 0.001$). Only German women were more likely to have been screened than Swiss women (OR of being untested = 0.29).

There is significant variability in the uptake of cervical cancer screening among six of the immigrant groups living in Switzerland. A systematic cervical cancer screening programme tailored to the

immigrant group profiles would benefit immigrant women and would be an important step towards equity of access to healthcare.

Keywords: cervical cancer screening, ethnicity, immigrants, minority, Pap smear

Introduction

Cervical cancer is the second commonest cancer among women worldwide. In the industrialised nations, the age-standardised incidence rate is 7.7 in 100 000 and the mortality rate is 3.6 in 100 000 women per year (Parkin *et al*, 2005). Cervical cancer screening is based mainly on the Papanicolaou test (Pap smear), which identifies pre-cancerous lesions on a woman's cervix. The diagnosis necessitates early treatment to prevent advanced-stage cervical cancer or death (Swiss Society of Obstetrics and Gynecology, 2004; American Cancer Society, 2005). Currently the World Health Organization (2004) and the European Commission (2006) recommend systematic programmes for cervical cancer screening, as this is a cost-effective method of reducing both the incidence and mortality rates of cervical cancer. Organised Pap smear screening means that cervical cancer has become a preventable disease. Invasive squamous-cell cancer is considered to represent a failure of screening (Garner, 2003). Furthermore, the introduction of human papillomavirus (HPV) vaccines has contributed to a reduction in the incidence and mortality of the disease (Beres, 2008).

In Switzerland, the European-standardised incidence and mortality rates of cervical cancer are 7 in 100 000 and 1.6 in 100 000 women per year, respectively. This results in an average of 90 deaths from cervical cancer each year (Association of Swiss Cancer Registries, 2006). One of the aims of the National Cancer Control Programme for Switzerland 2005–2010 is the improvement of early detection of cervical cancer (Schopper and Obrist, 2005).

The international literature shows that women in ethnic-minority groups are at risk for under-utilisation of preventive services (Rodriguez *et al*, 2005; Tammemagi, 2007). Immigrant women often present with advanced-stage cancer and are treated less aggressively compared with the majority population (Rodriguez *et al*, 2005). In several countries there has been increasing awareness of health-related inequalities between minority groups and the majority population (Smedley *et al*, 2003).

Wanner *et al* (2001), in an earlier survey in Switzerland, did not find any difference between Swiss and immigrant women with regard to mortality from

cervical cancer. However, those authors recommend that their findings be interpreted with caution because, for example, the accuracy of diagnosis was limited, and deaths in cases of re-migration to the country of origin were not taken into account. Self-reported use of Pap smears in Switzerland is significantly lower for less educated women (Raymond *et al*, 1996; Huwiler *et al*, 2002), for women over 65 years of age (Zemp, 2000) and for immigrants (Raymond *et al*, 1996; Vranjes *et al*, 1996; Wanner *et al*, 1998).

Studies in the UK, the USA and Australia have investigated the self-reported use of Pap smears among immigrant women, often by comparison with use among the native population. Although there is generally a lower rate of utilisation of cervical cancer screening by immigrant women, in one study the effect of having been born in another country (Goel *et al*, 2003; Taylor *et al*, 2003) disappeared after controlling for socio-demographic variables, including income, education, employment status, health insurance and marital status (Rodriguez *et al*, 2005). Swan *et al* (2003) suggested that women who have migrated to the USA within the last 10 years should be one of the groups targeted for intervention in order to increase participation in cervical cancer screening.

Not speaking the official language is also known to be a barrier to cancer screening (Taylor *et al*, 2001; Jacobs *et al*, 2003; De Alba *et al*, 2004).

The impact of race and/or ethnic origin has been highlighted by David *et al* (2000) in Germany. They found that Turkish women were less aware of the existence of the Pap smear than German women.

Over the last few years, there has been increasing awareness of health-related inequalities. According to Fiscella (2002), such inequalities result from interactions between socio-economic status, racism, segregation, culture, health behaviours and beliefs, access to and quality of healthcare, and genetics. Studies in Switzerland have confirmed that in that country, too, there is a relationship between low socio-economic status and poor health. The self-perceived state of health among immigrants in Switzerland is slightly worse than that among Swiss nationals (Bischoff and Wanner, 2008). In addition, immigrants use the healthcare system more often for accidents and illnesses than for disease prevention. It may be that prevention programmes are

not easily accessible to certain immigrant groups (Swiss Federal Office of Public Health, 2002).

During the last three decades, Switzerland has become a culturally diverse country. Around 22% of people currently living in Switzerland are immigrants, defined as people with foreign nationality (Rausa *et al*, 2006). Of the 1.7 million immigrants in Switzerland, 22% are Italian, 14% are from the former Yugoslavia (Serbia-Montenegro, Bosnia-Herzegovina and Kosovo), 10% are Portuguese, 8% are German, 6% are Spanish and 4% are French. The remaining 36% consist of smaller groups of other nationalities.

Against this background of increased diversity, we investigated whether there are inequalities in the uptake of cervical cancer screening between the main immigrant groups and Swiss nationals. We analysed baseline data from the Swiss Health Survey (SHS; Bischoff and Wanner, 2008) in order to detect variability in the self-reported use of the Pap smear.

Methods

Data source and population studied

The SHS is a household survey of health and illness, health-related behaviour and its determinants, and health service utilisation, and includes information on the socio-demographic characteristics of respondents. In 2002, on behalf of the Swiss Federal Statistical Office (SFSO), a telephone interview was conducted in three of the four official languages in Switzerland, namely German, French and Italian. The people who were interviewed were Swiss residents aged 15 years or over. The stratified random sample consisted of 32 868 individuals, and the participation rate was 64%, resulting in a final sample consisting of 19 706 residents (Graf and Renfer, 2005). Stratification was undertaken according to the administrative regions of residence (the cantons) in order to increase the sample for further cantonal analyses. Trained staff performed the interviews in four waves, corresponding to the four seasons. In certain circumstances (e.g. in the case of language or hearing problems) the interview was conducted using a proxy for the index person (5.7%). Excluded from the sample were asylum seekers, individuals who did not speak one of the three interview languages, and people in institutions such as hospitals, homes for elderly people, and prisons. At the time of the survey, approximately 2.5% of the total population lived in collective households, and the proportion of asylum seekers was less than 1%. Even if these figures are low, the exclusion of these groups may lead to an inaccurate estimate of the behaviours of non-European populations.

A total of 10 046 women, including all nationalities, aged 20 years or over, were asked whether they had

ever had a Pap smear. Women who had had a hysterectomy were not excluded, as they are also recommended to have a regular Pap smear, albeit at less frequent intervals (Swiss Society of Obstetrics and Gynecology, 2004).

The analysed subsample of our study consisted of women from the following major groups by nationality (large to small): Italian ($n = 306$), German ($n = 203$), the former Yugoslavia (Serbia, Montenegro, Macedonia, Bosnia and Herzegovina, and Croatia; $n = 89$), Portuguese ($n = 80$), Spanish ($n = 78$) and French ($n = 72$), with Swiss as controls ($n = 9011$). This gave a total sample size of 9839. Foreigners of other citizenship ($n = 207$) were excluded.

Variables and analyses

Descriptive statistics, Chi-square tests (Pearson's) and a logistic regression analysis were performed. The dichotomous variable of interest was 'never/ever had a Pap smear.' The main independent variable was 'immigrant group', with the categories according to country of origin (Italy, Germany, former Yugoslavia, Portugal, Spain and France). Women of both Swiss and another nationality were considered to be Swiss.

Based on international and Swiss studies (Raymond *et al*, 1996; Zemp, 2000; Huwiler *et al*, 2002; De Alba *et al*, 2005; Rodriguez *et al*, 2005), five further independent variables were considered, namely age, level of education, occupational status, household income and area of residence.

Age was used as a continuous variable in the logistic regression analysis, and as both continuous and categorical (20–34, 35–49, 50–64 and ≥ 65 years) variables in the descriptive statistics.

The variables 'level of education' and 'occupational status' are composites of other variables (Swiss Federal Statistical Office, 2003). Level of education consisted of four different categories, namely no education, primary school, secondary school (e.g. apprenticeship) and tertiary education. Occupational status was also divided into four categories, namely manual unskilled, blue collar (e.g. independent craftsmen, farmers), white collar, and management (higher qualified professionals).

The variable 'income' refers to equivalent income. In the research literature this is considered to indicate the distribution of earnings, and is relevant for international comparisons and discussions of socio-political implications (Swiss Federal Statistical Office, 2004). The variable 'area of residence' consisted of Region of Lake Geneva, Berner Mittelland, North-West Switzerland, Zurich, East Switzerland, Central Switzerland and Ticino.

To reduce the impact of non-responders and to improve statistical estimates, data from the telephone interviews were weighted by the SFSO using non-

response rates (Graf and Renfer, 2005), taking into account nationality, gender, age and area of residence (canton or region). Uni- and bivariate calculations were weighted using a factor calculated by the SFSO. In the multivariate analysis, the four relevant weighting variables were included in the regression model. Signs of multicollinearity were checked and analyses were run with the Statistical Package for Social Sciences (SPSS), using the correlations of estimates test (Chan, 2004). Correlations of any two variables were checked and showed moderate to low correlations. All procedures were run on SPSS 13, and the level of significance was set at $P < 0.05$.

Ethical considerations

The Swiss Health Survey was conducted on behalf of the Swiss Confederation by the SFSO, according to the principles and regulation of the Ethics Board of Public Statistics (Switzerland Schweizerische Gesellschaft für Statistik, 2008) Data were de-identified. We obtained permission to analyse the data via contract #04/100/05.04.04 (entitled 'Towards improving outcomes for migrant patients with chronic illness') with the SFSO.

Results

The socio-demographic characteristics of the subsample are presented in Table 1. Swiss and German women showed a similar distribution across all age categories, as did Italian and French women. Compared with these four nationality groups, women from the former Yugoslavia, Spain and Portugal had a lower mean age. French and German women were the most highly educated, and Portuguese women were the least well educated. With regard to occupation, women from Portugal, the former Yugoslavia, Spain and Italy had the highest percentage of individuals in the blue collar category. Women from Germany had the highest household income, followed by those from France and then those from Switzerland. The other four groups had lower household incomes, with Italian women having the lowest.

Pap smear

Table 2 shows the weighted, bivariate results of the Pap smear question for all nationality groups. A high proportion of women from Portugal (70%), the former Yugoslavia (46%), Spain (41%), France (35%) and Italy (34%) said that they had never had a Pap smear. This proportion was lower for women from the Swiss reference group (24%) and from Germany (12%). These differences are statistically significant.

Table 3 shows the results of the logistic regression analysis. Beforehand, collinearity testing produced no strong correlation between the independent variables.

The probability of never having had a Pap smear depended significantly on women's nationality, even when adjusted for age, level of education, occupational status, income and area of residence ($P < 0.001$).

Most of the immigrant groups were less likely to have been screened than the Swiss comparison group. This was the case for women from Portugal (odds ratio (OR) = 4.29), the former Yugoslavia (OR = 2.45), France (OR = 1.96), Spain (OR = 1.79) and Italy (OR = 1.53). Only women from Germany had been screened more often (OR = 0.29). The probability of never having had a Pap smear increased with age (OR = 1.02), and decreased with higher levels of education (OR = 0.089) and higher income (OR = 0.78). There was no association between occupation and the probability of never having had cervical cancer screening (OR = 1.05), but there were significant associations between the uptake of Pap smears and certain areas of residence.

Discussion

According to the Global Health Watch, migrants tend to experience poorer access to healthcare compared with the rest of the population (People's Health Movement, 2008). The epidemic of chronic diseases, including cancer, is now considered to be a major challenge among the ethnically diverse populations in Europe (Bhopal, 2009). Cervical cancer is a case in point. Uptake of the Pap smear is an important element of preventive behaviour and an indicator of healthcare accessibility for women. In this study we investigated cervical cancer screening among different immigrant groups in Switzerland. We analysed the Swiss Health Survey data and found significant variability in the self-reported use of Pap smears among six foreign nationality groups living in Switzerland, namely women from Italy, Germany, the former Yugoslavia, Portugal, Spain and France. Our results are consistent with the increasing body of research that documents healthcare inequalities between minority (immigrants and ethnic minorities) and majority (mainstream and local) populations (Fiscella *et al*, 2002; Smedley *et al*, 2003; Bhopal, 2007). These inequalities persist even after controlling for socio-demographic factors, including age, level of education, income and area of residence, especially with regard to women from Portugal, the former Yugoslavia and Italy.

Our findings correspond to those of international studies which show that immigrant women are less likely to undergo cervical cancer screening compared with women born in the country being studied (Goel *et al*, 2003). In Canada, ethnic-minority groups are less

Table 1 Socio-demographic characteristics of the analysed subsample from the 2002 Swiss Health Survey (women aged ≥ 20 years, $n = 9\,839$, weighted), with data expressed as rounded percentages or frequencies

	Country of origin							Significance level (<i>P</i> -value)
	Switzerland (<i>n</i> = 9011)	Italy (<i>n</i> = 306)	Germany (<i>n</i> = 203)	Former Yugoslavia (<i>n</i> = 89)	Portugal (<i>n</i> = 80)	Spain (<i>n</i> = 78)	France (<i>n</i> = 72)	
Age group (years)								
20–34	19%	29%	17%	47%	50%	35%	19%	0.0001 ^b
35–49	27%	26%	29%	37%	48%	36%	30%	
50–64	27%	26%	28%	16%	1%	23%	32%	
≥ 65	27%	19%	26%	0%	1%	6%	19%	
Mean (SD) ^a	52 (17)	48 (17)	52 (16)	37 (10)	36(8)	41 (13)	49 (15)	
Level of education								
No education	2%	4%	2%	3%	1%	1%	0%	0.001 ^b
Primary school	20%	42%	13%	35%	70%	35%	14%	
Secondary school	69%	51%	62%	55%	29%	55%	60%	
Tertiary education	9%	3%	23%	7%	0%	9%	25%	
No response ^c	0%	0%	0%	0%	0%	0%	1%	
Occupational status								
Manual unskilled	18%	39%	10%	43%	45%	41%	11%	0.0001 ^b
Blue collar	6%	2%	4%	0%	1%	7%	7%	
White collar	37%	29%	32%	24%	34%	26%	22%	
Management	32%	19%	47%	26%	17%	24%	58%	
No response ^c	7%	11%	7%	7%	3%	2%	2%	
Income ^a								
Mean (CHF ^d)	3843	3040	4400	3534	3440	3419	4304	0.001 ^c
SD (CHF ^d)	1825	1248	2407	1551	1281	1291	1509	
No response ^c	6%	7%	5%	6%	8%	13%	3%	

^a Income and age by mean and standard deviation (SD).

^b P (χ^2) for the differences across nationality groups, significant P -values < 0.05 .

^c 'No response' includes 'not asked', 'did not know' or 'did not respond.'

^d CHF = Swiss francs.

^e ANOVA test.

Table 2 Prevalence (rounded percentage values) and number of self-reported Pap smears for the analysed subsample from the 2002 Swiss Health Survey (women aged ≥ 20 years, $n = 9839$, weighted), by country of origin

	<i>n</i>	Yes (%)	No (%)	No answer (%) ^a	<i>P</i> -value ^b
Germany	203	87	12	1	
Switzerland	9011	75	24	1	
Italy	306	65	34	1	
France	72	64	35	1	0.001
Spain	78	59	41	0	
Former Yugoslavia	89	52	46	2	
Portugal	80	29	70	1	
Total	9839	73	26	1	

^a 'No answer' includes 'did not know' or 'did not answer.'

^b Significant *P*-values for differences among nationality groups < 0.05 .

commonly screened for cervical cancer than women from the majority population (Vissandjée and Dupéré, 2002), even after adjusting for socio-demographic and health characteristics (Quan *et al*, 2006). In Australia, the number of immigrant women from southern Europe who reported that they had ever had a Pap smear was significantly lower than that for the majority population (Taylor *et al*, 2001). In California, Latinas were less likely ever to have had a Pap smear than non-Latina whites (Rodríguez *et al*, 2005). However, in contrast, the California Health Interview Survey 2001 found no significant differences in the proportions of black, white and Hispanic women who had ever had a Pap smear (De Alba *et al*, 2004). This finding may reflect the effectiveness of the Californian National Breast and Cervical Cancer Early Detection Program (Centers for Disease Control and Prevention, 2006), which supports various organisations in their efforts to overcome disparities by implementing outreach and education programmes.

Both Swiss and international studies (from Canada and the USA) have shown that women of lower socio-economic status, as measured mainly by level of education and income, have less access to cervical cancer screening (Huwiler *et al*, 2002; Vissandjée and Dupéré, 2002; Parikh *et al*, 2003). Education raises awareness of the importance of regular health checks, and empowers people to take control over their own lives (Sabates and Feinstein, 2006). Wolff *et al* (2005, p. 2153) have described the role of low income in an insurance-based system: 'Poor people choose an insurance type

with a high contribution in order to keep their premium low, which causes major financial problems when healthcare is actually needed.' In Switzerland, cervical cancer screening requires a personal financial contribution, and is therefore more likely to be neglected by women on a low income.

Our analysis provides evidence that ethnicity, as defined by country of origin (Stronks *et al*, 2008), in combination with income and level of education, affects uptake of the Pap smear by immigrant women (Bischoff and Wanner, 2008; Fontana and Bischoff, 2008). Therefore cervical screening policies need to take into account both ethnicity/immigrant group-related and socio-demographic inequalities (Qi *et al*, 2006; Ingleby, 2008; Vitorino, 2009).

Cervical cancer screening policies in Europe

It can be assumed that the attitudes of immigrants living in Switzerland towards cancer screening are also influenced by screening practices in their country of birth. There is some evidence that television channels and newspaper campaigns that are received from the country of birth influence immigrant women's attitudes. The most commonly cited source of health information is that provided in the native language commonly used by ethnic minorities (O'Malley *et al*, 1999), through television, magazines and newspapers (Brunton and Thomas, 2002). The results of media research on the topic are inconsistent. An Austrian

Table 3 Factors associated with self-reported uptake of Pap smear, and probability of never having had a Pap smear, with odds ratio (OR) and 95% confidence interval (CI) computed using logistic regression models

Country of origin	Odds ratio (OR)	95% Confidence interval (CI)		Significance ^a (<i>P</i> -value)
Switzerland (reference)	1.000			< 0.001
Portugal	4.293	2.612	7.056	< 0.001
Former Yugoslavia	2.448	1.468	4.082	0.001
France	1.958	1.140	3.363	0.015
Spain	1.791	1.026	3.126	0.040
Italy	1.530	1.136	2.060	0.005
Germany	0.294	0.169	0.514	< 0.001
Age (years)	1.018	1.014	1.021	< 0.001
Level of education ^b	1.000			0.016
Secondary school	1.277	0.817	2.003	0.287
Primary school	1.001	0.643	1.559	0.996
No education	0.950	0.583	1.547	0.836
Occupational status ^c	1.000		1.000	0.227
White collar	0.911	0.770	1.077	0.275
Blue collar	0.851	0.730	0.9930	0.041
Unskilled	0.938	0.733	1.200	0.610
Income	0.785	0.720	0.857	< 0.001
Area of residence				< 0.001
Region of Lake Geneva (reference)	1.000			
Berner Mittelland	0.639	0.536	0.761	< 0.001
North-West Switzerland	0.527	0.429	0.648	< 0.001
Zurich	0.868	0.696	1.082	0.209
East Switzerland	0.526	0.421	0.657	< 0.001
Central Switzerland	0.730	0.600	0.889	0.002
Ticino	1.186	0.952	1.477	0.129

^a Logistic regression analysis significance (*P*-values < 0.05).

^b Reference level for education is tertiary level.

^c Reference level for occupational status is management.

study (Growth from Knowledge Market Research, 2008) indicated that immigrants prefer to watch television news from their country of birth (74%) compared with other programmes, whereas a German media group reported that most immigrants except Turkish nationals (14%) show the same behaviour as the native population (Handelsblatt, 2007). However, the influence of an Italian-language media campaign that was directed towards the Italian community in Australia did not significantly increase attendance at screening services (Page *et al*, 2005).

The European Commission (2006) recommends that cervical cancer screening should be offered through a population-based organised programme. This includes personal letters of invitation to have a Pap test, and a mechanism for systematic quality control. A survey of cervical cancer screening policies in 18 European countries showed that only a few of them met the recommendations of the European Commission (Anttila *et al*, 2004). In Germany, 80% of the population have undergone cervical cancer screening within the last three years (van Ballegooijen *et al*, 2000). Germany has an opportunistic system, with no organised programme,

and experts suggest a one-year interval between tests. In Germany, both Pap smear tests and human papillomavirus (HPV) vaccinations are cost-free (Deutsche Krebshilfe, 2008), although so far there has been no nationwide organised screening. No national recommendations or data were found for Portugal, but regional data showed a participation rate of 37% in the last three years (van Ballegooijen *et al*, 2000). In Catalonia (Spain), according to regional self-reported data from the 1994 Catalan Health Survey, 42% of women have a Pap test at some stage (Borras *et al*, 1999). In Italy, some well-organised screening programmes are available on a regional basis, but these are concentrated in the northern part of the country. Overall, there is 50% coverage in Italy (Segnan *et al*, 2000; van Ballegooijen *et al*, 2000). In France, some systematic programmes have been implemented, with 50–69% of the population having had a Pap test within the last three years (Anttila *et al*, 2004). There are very few data for the former Yugoslavia. In two cities in Serbia, 66% of women have had a test at some stage ($n = 775$; Kesic *et al*, 2005; Markovic *et al*, 2005).

In general, it seems that cervical cancer screening policies in most of the countries that have been examined differ, although the fact that the methodology of the studies also differs must be taken into account. Nevertheless, some of the findings are striking.

There are very few data from Portugal and the former Yugoslavia about uptake of cervical cancer screening, and Germany has the highest screening rate. Switzerland has an opportunistic approach to cervical cancer screening. One problem with opportunistic systems is that they may not cover the whole population adequately, possibly missing people with reduced access to information (Bhopal, 2007), including, among others, immigrants. However, it is sometimes argued that some women in Switzerland undergo too many Pap tests, incurring unnecessary costs for the health system (Biedermann, 2005).

Promoting equal access to cervical cancer screening in Switzerland

As part of the move to achieve a system of equal health opportunities for everyone living in Switzerland (World Health Organization, 1998; Saladin *et al*, 2007), both unequal access to cervical cancer screening and over-screening must be eliminated. The aim of the National Cancer Control Programme 2005–2010 is to improve the early detection of cervical cancer (Schopper and Obrist, 2005). Prevention and healthcare promotion, healthcare provision, and research on the health and healthcare needs of immigrants are three of five goals in the Migration and Public Health Strategy 2002–2007 (Swiss Federal Office of Public Health, 2002). A systematic screening programme, as recommended by

the European Commission and the World Health Organization, adapted to the needs of still under-served population groups such as immigrants, could bring these three concepts together.

To achieve an organised and culturally sensitive screening programme, letters of invitation to attend screening services should be sent to immigrant women in their first language (Vellozzi *et al*, 1996), and the cost of Pap smears should be deducted from any personal financial contribution (Biedermann, 2005). Loerzel and Bushy (2005) distinguish between system barriers, such as insurance, usual source of care, low income, and communication within the healthcare system, and human barriers, such as low level of education, fear of the test, lack of knowledge about cervical cancer, and cultural beliefs. In Germany, David *et al* (2000) found that Turkish women are less aware of the Pap test than are German women. Garbers and Chiasson (2004) reported that Latina immigrants in New York have difficulty in understanding medical information, even when it is written in Spanish. In Israel, feelings of embarrassment and the belief that there is no cure for cancer were identified as barriers to breast cancer screening among Muslim women (Aziza and Cohen, 2006). The Institute of Medicine states that, among numerous reasons for inequalities in access to screening services, bias, prejudice and stereotyping on the part of health professionals may contribute to differences in and lower quality of care (Smedley *et al*, 2003). Despite providers' best intentions, women who belong to minorities can experience negative racial attitudes that are unconsciously demonstrated by healthcare professionals.

Giarratano *et al* (2005) have described a programme designed to improve access to breast and cervical cancer screening for ethnic-minority, under-served women in the USA. Community lay health educators deliver their message in a spiritual context, and empower women to take responsibility for their health through education, self-care practices and annual screening. Culturally competent advanced practice nurses then follow up women who have an appointment for Pap testing.

In Switzerland, as part of the national Migration and Health Strategy (Swiss Federal Office of Public Health, 2002), efforts should be made to find out how to increase access to cervical cancer screening for under-served immigrant women and other minorities, including the elderly and women of low socio-economic status. A combination of strategies may be desirable, including the mass media, direct bilingual mailings, provider education and focus groups (Vellozzi *et al*, 1996; Markovic *et al*, 2005). The implementation of an immigrant group-specific, culturally sensitive and organised cervical cancer screening programme in Switzerland will require collaboration among different healthcare professionals with immigrant communities.

Study limitations

Our study has several limitations. Some of these are due to the fact that the Swiss Health Survey was not developed with a view to examining immigrant-specific issues (Bischoff and Wanner, 2003). The participation rate according to immigrant group was not measured (Graf and Renfer, 2005). However, it is known that this rate is lower among immigrant groups than among the native population, in particular among recent migrants and those who do not speak one of the official languages (Wiking *et al*, 2004). One important limitation of our study was the exclusion of immigrants who do not speak one of the three official languages, namely German, French or Italian. Undocumented immigrants, asylum seekers and people who have recently moved to Switzerland were also not represented in the study population. The latter probably do not have a landline telephone in the early months following their arrival. A recent Swiss study showed that only a third of undocumented immigrants in Geneva had ever had a Pap smear (Wolff *et al*, 2005). We assume that if the Swiss Health Survey had included a higher proportion of immigrants who were less integrated, and if we had also had access to clinical data on cervical cancer screening, we would have found an even lower rate of uptake of the Pap smear among the immigrant population.

Conclusions

In our survey, five of the six immigrant groups had lower self-reported rates of participation in cervical cancer screening than the Swiss group. This is unacceptable both in terms of cost-effective preventive measures, and in terms of the goal of equity of access to healthcare. The introduction of a systematic cervical cancer screening programme tailored to specific immigrant groups such as those from Portugal, the former Yugoslavia and Italy would benefit immigrant women and would be an important step towards the reduction of health inequalities and towards equity in the Swiss healthcare system.

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CONFLICTS OF INTEREST

None.

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