Uptake of breast cancer screening measures among immigrant and Swiss women in Switzerland

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Summary

Background: Early detection of breast cancer plays a crucial role in survival, and in most developed countries immigrant women present for treatment at a later stage of the disease. Compared to the indigenous population, immigrant women have a lower uptake of breast cancer prevention services. The situation for immigrant women in Switzerland is compounded by the fact that all women living in Switzerland are at major risk of developing breast cancer during their lifetime.

Question under study: Our study aimed to detect disparities in uptake of preventive methods such as mammography, clinical breast examination (CBE) and breast self-examination (BSE) among women from the four major immigrant groups Italy, Spain, former Yugoslavia and Portugal, compared to the native population in Switzerland.

Methods: This study is a secondary analysis of data from the 2002 Swiss Health Survey, a nationwide cross-sectional telephone survey. The self-reported questionnaires addressed immigrant and Swiss women of age 20 and over (n = 9,790). Descriptive statistics were used to describe the demographic characteristics of the sample. The dichotomous variables of interest, mammography, CBE and BSE were adjusted for nationality and further sociodemographic factors using logistic regression, with Swiss women serving as the comparison group.

Results: Main predictors for mammography uptake were higher income and older age. For the use of CBE, lower age, higher income and nationality were the strongest predictors. Women from former Yugoslavia (OR = 2.6) and Portugal (OR = 2.8) more frequently stated that they did not receive CBE compared to Swiss females (p = 0.011). BSE is linked to a higher socioprofessional status and to nationality. Women from Italy (OR = 1.62) and former Yugoslavia (OR = 2.6) perform BSE significantly less often than Swiss women (p = 0.0001).

Conclusion: Differences exist in the use of mammography, CBE and BSE among the four major foreign nationality groups living in Switzerland compared to Swiss nationals. Immigrant and low-income women might draw benefit from a systematic and culturally adapted breast cancer screening programme to overcome disparities in access to screening.

Key words: ethnicity; migrants; breast cancer; disparity; mammography; clinical breast examination; breast self-examination

Introduction

Breast cancer is the most common cause of death among women in Switzerland.

According to the 2006 estimates of the Swiss Cancer League [1], 5300 new cases of breast cancer are diagnosed each year, with future estimates showing a rising trend [2].

Despite the recent increase in overall rates of mammogram use in industrialised countries, uptake of breast cancer preventive measures remains persistently low among ethnic minorities [3–5]. The Federal Office of Public Health (FOPH), in collaboration with the World Health Organisation, has developed a migration-specific strategy called Migration and Public Health. This strategy aims to address and reduce health disparities by offering a health care system that is accessible for all. This five-field intervention strategy suggests priorities to be set in the domains of prevention, education, research, health promotion and therapy for traumatised asylum seekers [6].

Switzerland is affected by major immigration flows as well as by long term and short term migration [7]. Immigrants account for approximately one fifth (1,655,300) of the residential pop-
The main variable of interest was nationality of the sample, which consisted of five variables: nationality, age, education, occupation, and income. The Swiss Health Survey (SHS) questionnaire, which was used to gather data, included items for the self-reported use of mammography, clinical breast examination (CBE), and breast self-examination (BSE). Women aged twenty years and older were asked questions about their mammography and breast examination habits. The survey was conducted in 1992 and 1997, providing data on the use of cancer screening tools.

Methods

Research design, sample, data collection
The present study is based on exploratory secondary analysis of data from the 2002 SHS, a cross-sectional household survey. The SHS targets the general population in Switzerland and provides representative information on demographic characteristics and health-related behaviour. The stratified random sample consisted of 32,868 individuals. The participation rate was 64%, resulting in a final sample of 19,706 residents aged 15–74 years. Persons were excluded if they did not understand one of the indicated languages (German, French, Italian) or could not be contacted by phone. Trained staff performed computer-assisted telephone interviews, and participants were requested to fill in the questionnaires following the interview.

Variables and Measurement
The instrument used for data gathering was the 2002 SHS questionnaire. Items from the questionnaire, addressing the use of mammography, CBE, and BSE, were included for analyses. Socio-demographic characteristics of the sample consisted of five variables: nationality, age, educational level, socioprofessional category, and income. The main variable of interest was nationality, defined by the women's citizenship. The variable age has been classified into four different age groups (20–34, 35–49, 50–64, and ≥65 years) and in a continuous form. The continuous variable income refers to the equivalent income and is considered in research literature to specify the distribution of earnings.

The effectiveness of breast cancer screening is well established and has been investigated for over 30 years. The Swiss Cancer Society considers high quality mammography to be the most important and specific method of predicting breast cancer. Despite controversy as to the benefits of mammography, screening mammography is the most efficient and cost-effective tool in detecting cancer at an asymptomatic stage and subsequently reducing mortality. The effectiveness of screening in lowering breast cancer mortality is however only established for mammography, and is greatest for women aged 50–69. CBE and BSE remain additional tools for diagnostic purposes and represent non-invasive options.

People living in poverty or belonging to an ethnic minority face several disadvantages when they are affected by cancer. This means that women from ethnic minorities living in developed countries present with more advanced stages of the disease and are treated less aggressively compared to women from the indigenous population. Bisig et al. confirmed that preventive measures such as CBE and Pap smear are performed less frequently in immigrant women, and these results remained significant after allowing for sociodemographic factors. The Swiss Health Survey conducted in 1992 and 1997 did not provide sufficient data on specific nationality groups to draw reliable conclusions concerning preventive measures and breast cancer. In this research paper, baseline data from the Swiss Health Survey 2002 (SHS) has been analysed to detect variability in the self-reported use of mammography, CBE, and BSE among major nationality groups living in Switzerland as compared to the Swiss population.

Statistical analyses
Depending on the level of data (interval or nominal), parametric or nonparametric tests were employed. Data from the Swiss women were used as the comparison group. Initially, socio-demographic characteristics of the participants were described by mean age, mean income, category of age-group as well as categories of education and occupation. In a second step Chi square tests (Pearson's) were performed to determine the relationship between independent variables and outcomes of interest. For our purposes all three outcome variables, mammography, CBE and BSE, were dichotomised (yes/no). In a third step, logistic regression was used to predict the presence/absence of the outcome variables mammog-
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raphy, CBE, BSE based on the predictor variables nationality, age, income, education and socioprofession. Multicollinearity was checked in advance by the correlation of estimates test. Statistical procedures were carried out by SPSS (Statistical Package for Social Sciences) Version 11.0. Level of significance was set at p < 0.05.

**Ethical considerations**

Data were de-identified. We obtained permission to analyse and publish the data via contract # 04/100 05 04 (title: “Towards improving outcomes for migrant patients with chronic illness”) with the Swiss Federal Statistical Office.

**Results**

The subsample of the present study includes 9,790 women aged 20 years or over, and represents the largest nationality groups living in Switzerland: Italians, nationals from former Yugoslavia (including Serbs, Montenegrians, Croats, Bosnians, Kosovars and Macedonians), Spanish, Portuguese and Swiss nationals. Owing to small sample sizes, women from Turkey and Albania could not be included in our study. Also excluded were participants from Germany and France, since the uptake of breast cancer screening measures by these two nationality groups was previously found to be comparable to, and not significantly different from, those of the Swiss population [5].

Nationality groups consisted of 9,193 Swiss (93.9%), 316 Italian (3.2%), 111 Yugoslav (1.1%), 85 Spanish (0.9%) and 85 Portuguese (0.9%). Table 1 shows the sociodemographic characteristics of the sample. Swiss women have the highest mean age, present the highest level of education, are represented most frequently in the management section and earn the highest income compared to all other nationality groups.

Table 2 shows the rates of mammography, CBE and BSE use resulting from the frequency tables. Women from Yugoslavia have mammographies at a comparatively low rate (16.7%). Results for CBE differ to a minor extent between nationality groups, with Swiss women showing an uptake of 93.8% compared to Portuguese women (90%). In regard to BSE, Swiss women show the highest rate (85.2%) compared to women from former Yugoslavia, who have the lowest (71.9%).

The covariate nationality was not a factor in explaining the absence of mammogram use. Income and age were the only significant predictors of the probability of never having had a mammography. The higher the income (OR = 0.998) and the higher the age (OR = 0.955), the lower the probability of never having had a mammography.

The absence of CBE could not be explained by nationality for the Italians and Spaniards. Women from former Yugoslavia (OR = 2.6) and Portugal (OR = 2.8) were significantly less likely to have ever had a CBE compared to Swiss females. The probability of never having had a CBE increases with age (OR = 1.025) and decreases with higher income (OR = 0.998). No significant correlation existed between the socioprofessional and educational categories.

Logistic regression for BSE shows significant results for Italians (OR = 1.62) and former Yugoslavs (OR = 2.6), who report, more frequently than Swiss women, that they never perform BSE. The outcome variable never performed BSE decreases with more qualified professional status (OR = 0.91). Income, education and age did not prove to be predictors. Table 3 shows the results of the logistic regression analyses for all three outcome variables.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Sociodemographic characteristics of analysed subsample from the 2002 SHS, women age ≥20, N = 9,790.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Group</td>
<td>Total N = 9790</td>
</tr>
<tr>
<td>20–34</td>
<td>19.3%</td>
</tr>
<tr>
<td>35–49</td>
<td>28.5%</td>
</tr>
<tr>
<td>50–64</td>
<td>26.7%</td>
</tr>
<tr>
<td>≥65</td>
<td>25.6%</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>51.3(17)</td>
</tr>
<tr>
<td>Education</td>
<td>No education</td>
</tr>
<tr>
<td>Primary school</td>
<td>21.9%</td>
</tr>
<tr>
<td>Secondary school</td>
<td>66.8%</td>
</tr>
<tr>
<td>Tertiary school</td>
<td>9.1%</td>
</tr>
<tr>
<td>No answer</td>
<td>0.1%</td>
</tr>
<tr>
<td>Occupational status</td>
<td>Management</td>
</tr>
<tr>
<td>White collar</td>
<td>38%</td>
</tr>
<tr>
<td>Blue collar</td>
<td>6.5%</td>
</tr>
<tr>
<td>Manual unskilled</td>
<td>20.3%</td>
</tr>
<tr>
<td>No answer</td>
<td>1.3%</td>
</tr>
<tr>
<td>Income</td>
<td>Mean (CHF)</td>
</tr>
<tr>
<td>SD</td>
<td>2.018</td>
</tr>
</tbody>
</table>

1 p (c2) for the differences across nationality groups, sign. P values <0.05
2 No answer including don't know
Table 2
Prevalence (%) and number of self-reported preventive measures (mammography, CBE & BSE) of subsample of the 2002 SHS, women aged ≥20, grouped by nationality.

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Mammography</th>
<th>Clinical Breast Examination</th>
<th>Breast Self-Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>yes</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Swiss</td>
<td>2,312</td>
<td>34.1</td>
<td>6773</td>
</tr>
<tr>
<td>Italians</td>
<td>62</td>
<td>29.8</td>
<td>208</td>
</tr>
<tr>
<td>Former Yugoslavs</td>
<td>12</td>
<td>16.7</td>
<td>72</td>
</tr>
<tr>
<td>Spaniards</td>
<td>19</td>
<td>31.7</td>
<td>60</td>
</tr>
<tr>
<td>Portuguese</td>
<td>14</td>
<td>23</td>
<td>61</td>
</tr>
<tr>
<td>Total</td>
<td>2,419</td>
<td>33.7</td>
<td>7,174</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Language region</th>
<th>Mammography</th>
<th>Clinical Breast Examination</th>
<th>Breast Self-Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Swiss German</td>
<td>1,152</td>
<td>49.2</td>
<td>387</td>
</tr>
<tr>
<td>French</td>
<td>387</td>
<td>69.1</td>
<td>120</td>
</tr>
</tbody>
</table>

1 Don’t know, including no answer.

Table 3
Factors associated with self-reported mammogram, Clinical Breast Examination and Breast Self-Examination use. Probability of never had a mammogram, CBE or BSE. Odds ratios (OR) and 95% confidence intervals (CI) were computed using logistic regression models.

<table>
<thead>
<tr>
<th>Mammography</th>
<th>Total n</th>
<th>Swiss</th>
<th>Residents</th>
<th>Foreigners</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>1,659</td>
<td>53.6</td>
<td>161</td>
<td>54.3</td>
<td>47</td>
</tr>
</tbody>
</table>

Table 4
Mammography uptake, women aged >50, n = 3098, sample dichotomised into Swiss residents vs foreigners and stratified by Swiss language regions.

<table>
<thead>
<tr>
<th>Language region</th>
<th>Total n</th>
<th>Swiss</th>
<th>Residents</th>
<th>Foreigners</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>1,152</td>
<td>49.2</td>
<td>387</td>
<td>69.1</td>
<td>120</td>
</tr>
</tbody>
</table>

1 Foreigners including women from Italy, former Yugoslavia and Spain
2 P-value <0.05
3 Not significant p >0.229

Chi2 tests were applied to determine differences across nationality groups and language regions (sign. <0.05).

The subsample of the groups investigated includes 3,098 women aged 50 years and over. Non-Swiss nationality groups were combined into one group labelled as foreigners. Results show the mammography utilisation with a higher uptake for foreigners (60.3%) compared to Swiss citizens (53.4%), but the results were not significant (60.229).

Results for mammography uptake by language region indicate the highest uptake (69.1%) for French-speaking Switzerland compared to the German-speaking region (49.2).
Discussion

Uptake of mammography, CBE and BSE are important components of preventive behaviour and indicators of access to health care for women. Unlike most studies investigating only one of the breast cancer screening measures, this paper examined all three methods in relation to screening prevalence rates and factors predictive of uptake. Analyses of former SHS data generally considered females of various nationalities as one single group, labelled as immigrants or foreign nationals. This study investigated recourse to mammography, CBE and BSE among women of four major nationality groups compared to Swiss nationals. Results provide evidence of important differences in use of all three preventive methods among females of the four nationalities mentioned. Mammography, CBE and BSE uptake appear to have varying sociodemographic predictors.

While self-reported uptake of mammography cannot be predicted by the nationalities investigated, the variables age and income are significant. Younger females with lower incomes are less likely to have a mammogram than older females and those with higher earnings. Previous research identified older age as a relevant factor for mammography uptake [24, 27]. This can be explained by the fact that physicians in Switzerland generally recommend mammograms for women in the 50-year and over age group. In our study all immigrant participants have a lower mean age and thus do not yet belong to this target group. Demographic changes in European populations are marked by aging and migration. For the future provision of breast cancer screening services both aspects will become important. In this study lower income is one of the strongest determinants for non-use of mammography and absence of CBE, whereas BSE, a self-administered measure, is clearly not affected by income. These results are supported by the results from the 1997 SHS, where female immigrants and lower income groups make less use of preventive measures [23]. Further, international studies have identified low income as a strong predictor for underuse of mammography screening among ethnic minorities [28, 29].

International investigations [29, 30] have shown that membership of an ethnic minority is predictive of lower mammography use when compared to the indigenous population. This evidence, however, cannot automatically be applied to Switzerland and comparisons should be treated with caution. US minorities are often categorised as “Black” and “Hispanic” populations. In contrast, the Swiss migration population consists of nationalities primarily from Southern Europe, Turkey or diverse ethnic groups from former Yugoslavia. However, mammography screening has the highest impact on mortality and furthermore is cost-effective in the long run.

Our study supports the idea that older women with lower income undergo CBE less frequently than younger women on higher earnings. For females from former Yugoslavia and Portugal the probability of not undergoing CBE is up to three times higher than for Swiss women. A recently conducted Swiss study (2007) found that older women in general are less concerned about breast cancer prevention and receive less CBE [31]. An international research paper on the topic [32] supports our results. Low income seems to be one of the strongest predictors in national and international investigations examining underuse of CBE and mammography [23, 33].

The present study suggests that participants from Italy and former Yugoslavia, as well as women with a lower occupational status, are less likely to perform BSE. Age, income and education are not linked to BSE, a fact mirrored by one study from Australia [34]. Two national studies investigated the patterns of BSE among Swiss women. Glaus et al. [9] reported major regional differences in BSE utilisation. Prevalence is higher in the German-speaking area of Switzerland compared to the French region. International studies observed that ethnic minority females with lower socioeconomic status perform BSE less than the native population [35, 36]. The literature suggests [16] that BSE is of limited effectiveness and remains an optional preventive measure that can be performed by women after instruction by a health specialist.

Further potential factors influencing breast cancer screening

A major concern of the FOPH is to overcome disparities in access to health services and to limit health risks for immigrants and deprived persons. Further research is needed to understand disparities in mammography, CBE and BSE use. Attempts should be made to address additional barriers to equitable access to and uptake of the preventive methods investigated.

In our study, education was not linked to any of the preventive methods and only occupational status was associated with BSE. Despite these findings national and international investigations suggest that health-related decisions are strongly shaped by education and socioprofessional determinants [19, 23]. Immigrant women are often exposed to disadvantages in several social domains and face discrimination in both the educational and occupational sectors. These preconditions may lead to disparities in health access and might affect the uptake of breast cancer screening services. Health literacy and health communication are important factors concerning informed choice of preventive methods. Educational materials are often written at reading levels that are inappropriate for women who belong to ethnic mi-
norities. Simply understanding the recommendations for preventive examinations remains quite a challenge. Thus, in spite of media campaigns with information for the public or personal invitations, guidelines cannot be followed [37].

Clinical implications

Systematic and nationwide programmes are able to reach 70% to 90% of a target population [38]. Occasional breast cancer screening practices, as they exist in Switzerland, are less likely to cover the total population and may miss the most disadvantaged women. Additionally, it must be borne in mind that reimbursement for services such as mammograms or CBE is not guaranteed at present, and this may be experienced as a financial burden by low income women. If publicly organised mammography screenings were cost free, low-income women might be more inclined to take part in screening [39]. The establishment of systematic screening programmes could help to eliminate uneven access and would be a crucial step towards the FOPH's Migration and Public Health Strategy orientation. However, in Switzerland, implementation of a national breast cancer screening programme requires legal regulation by policy makers and calls for the cooperation of a variety of health care professionals.

Nevertheless, some efforts have been undertaken in Switzerland. Population-based screening programmes have been successfully introduced in the western region of Switzerland, beginning in 1999 [14]. The Swiss Cancer League offers a leaflet with instructions and illustration of BSE written in fifteen languages, and Albanian-, Bosnian- and Turkish-language versions are available online [40]. Combined efforts by various health worker groups should focus on culturally appropriate information and education, to achieve equitable access to breast cancer screening methods.

Limitations

Several factors should be considered in interpreting the results of our study. The exclusion of foreign language speakers means that recent arrivals such as asylum seekers or refugees could not provide information on their health prevention behaviours. A further limitation is that Turkish and Albanian women could not be included in our study due to the small number of women responding to this survey. As the Turkish- (5.3%) and Albanian-speaking (3.7%) populations represent two of the larger nationality groups living in Switzerland [8] they should be represented in the same proportion as in the resident population. Self-reported ratings may be overestimated [41] and are subject to measurement error. In terms of mammography, it is unknown whether participants used the service as a preventive method or whether they received a mammogram due to a previously detected abnormality.

Conclusion

Four female nationality groups living in Switzerland show significant differences in uptake of breast cancer prevention measures compared to the indigenous population. In order to achieve the Migration and Health Strategy goals and provide appropriate health services, major efforts need to be undertaken that are culturally sensitive and tailored to the needs of immigrants and low-income women. The provision of easy and cheap access to breast cancer screening measures such as mammography and CBE, together with future Swiss Health Surveys that do not exclude disadvantaged groups of migrant women, would be a pivotal step in narrowing health disparities. Further research is needed to identify and address screening barriers.

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