

BMJ Open Cervical and breast cancer screening participation and utilisation of maternal health services: a cross-sectional study among immigrant women in Southern Italy

Aida Bianco, Elisabetta Larosa, Claudia Pileggi, Carmelo G A Nobile, Maria Pavia

To cite: Bianco A, Larosa E, Pileggi C, *et al.* Cervical and breast cancer screening participation and utilisation of maternal health services: a cross-sectional study among immigrant women in Southern Italy. *BMJ Open* 2017;7:e016306. doi:10.1136/bmjopen-2017-016306

► Prepublication history and additional material for this paper are available online. To view these files, please visit the journal (<http://dx.doi.org/10.1136/bmjopen-2017-016306>).

Received 6 February 2017
Revised 18 July 2017
Accepted 26 July 2017



CrossMark

Department of Health Sciences, University of Catanzaro "Magna Graecia", Campus of Germaneto, Catanzaro, Italy

Correspondence to

Dr Maria Pavia; pavia@unicz.it

ABSTRACT

Objectives Women make up approximately half of the world's one billion migrants. Immigrant women tend to be one of the most vulnerable population groups with respect to healthcare. Cancer screening (CS) and maternal and reproductive health have been included among the 10 main issues pertinent to women's health. The aim of this study is to explore breast and cervical CS participation and to acquire information regarding access to healthcare services during pregnancy, childbirth and the postpartum period among age eligible immigrant women in Southern Italy.

Methods A structured questionnaire was used to collect data from each participant. Women aged 25–64 years who had not had a hysterectomy and women aged 50–69 years without history of breast cancer were considered eligible for the evaluation of cervical and breast CS participation, respectively. Moreover, women who had delivered at least once in Italy were enrolled to describe antenatal and postpartum care services use. All women were recruited through the third sector and non-profit organisations (NPOs).

Results Rate of cervical CS among the 419 eligible women was low (39.1%), and about one-third had had a Pap test for screening purposes within a 3-year period from interview (32.8%). Regarding breast CS practices, of the 125 eligible women 45.6% had had a mammography for control purposes and less than a quarter (26, 20.8%) had their mammography within the recommended time interval of 2 years. About 80% of the respondents did not report difficulties of access and use of antenatal and postpartum services.

Conclusion This study provides currently unavailable information about adherence to CS and maternal and child health that could encourage future research to develop and test culturally appropriate, women-centred strategies for promoting timely and regular CS among immigrant women in Italy.

BACKGROUND

Estimates from the United Nations show that women make up approximately half of the world's one billion migrants.¹ The effects of migration on women's health are varied and hard to predict and may be determined by

Strengths and limitations of this study

- The high participation rate (92.3%) is extremely satisfactory and restricts one major potential source of bias in the results.
- Immigrants who did not speak Italian or who had low literacy levels have not been excluded from the study, helped by linguistic and cultural mediators.
- The sample may not be representative of all immigrants within the region, but only of those connected to non-profit organisations and with a regular stay permit.
- There may be an effect of recall bias on self-reported information about cancer screening practices.

a number of factors: the conditions under which the migration occurred, how well a particular individual has integrated in the host society, the social status of the individual in the host country and the health conditions that are existent in the host country. Studies have indicated that women who migrate tend to be one of the most vulnerable population groups with respect to healthcare.^{2,3} In particular, women who do not speak the host country language and do not have a job are less likely to benefit from the health system of the host nation.⁴ These women are usually dependent on men and are unaware of the available health services. Governments should ensure that appropriate health services are provided that adequately address all aspects of women's health, particularly cancer screening (CS) and maternal and reproductive health. These basic healthcare services have been included among the 10 main issues pertinent to women's health, whether it is in immigrants or native inhabitants,⁵ and they ought to be available to everyone in society in accordance with social equality.

Breast cancer is the most frequently diagnosed cancer and the leading cause of cancer death among women worldwide. Previous research has shown that immigrant status is associated with breast cancer risk through changes in reproductive factors (eg, higher age at first live birth, lower breastfeeding rates) and lifestyle factors (eg, diet) but could also indicate variations in other environmental exposures.^{6–8} Cervical cancer is the second-most commonly diagnosed cancer and although in several western countries its burden has decreased by as much as 65% over the past 40 years thanks to screening programme,⁹ it is still the third-leading cause of cancer death in less developed countries and an important healthcare issue among migrant women.

Detecting both these cancers early is key to keeping women alive and healthy. Increased health risks have been noted among immigrants and ethnic minorities who also may receive less healthcare than the native population,^{10–11} while at the same time numerous studies have documented lower participation in CS programme among various migrant groups.^{12–14} Furthermore ethnic minority women residing in Western countries are more likely to be diagnosed with advanced-stage disease and hence have higher mortality rates,¹⁵ often as a result of lower utilisation of timely CS services.^{16–18}

Over the course of the last century, there have been many tremendous improvements in maternal and neonatal outcomes in terms of pregnancy-related complications, maternal and infant mortality rates.¹⁹ But the benefits of these have not extended everywhere and to everyone, since significant disparities by race and ethnicity persist. Studies on the determinants of maternal healthcare delivery suggest that social, economic, behavioural and environmental factors explain the worse outcomes among migrants^{20–23} in terms of preterm delivery, congenital anomalies, low birth weight, fetal growth restriction and infant mortality^{24–26} when compared with the native population.²⁷ In Italy, both native and foreign women have the right to participate free of charge in a specific programme of care during pregnancy and up to 1 month following delivery.

The aims of this survey were to explore breast and cervical CS participation and to acquire information regarding access to healthcare services during pregnancy, childbirth and the postpartum period among age eligible immigrant women in Southern Italy.

METHODS

Study population

The survey was conducted from May 2012 to April 2013. The study population consisted of a specific subset of immigrants. For this study, immigrants were defined as those from low-income or middle-income countries according to the classification of the World Bank based on per capita GDP.²⁸ Tourists were excluded.

Details regarding sampling of individuals for this study have been described elsewhere.²⁹ Briefly, since probability

or random sampling cannot be carried out on immigrants, a convenience sampling method was applied. Women aged 18 or more living in Italy for at least 12 months were recruited through the third sector and non-profit organisations (NPOs) that provide support to immigrants and work to facilitate their access to healthcare.

In Italy, organised nationwide CS programmes include personal invitations for a Pap test sent to women aged 25–64 years every 3 years and for mammography to women aged 50–69 years every 2 years. Therefore, sexually active women aged 25–64 years who had not had a hysterectomy and women aged 50–69 years without previous diagnosis of invasive or in situ breast cancer were considered eligible for evaluation of cervical and breast CS participation, respectively. Moreover, women who had delivered at least once in Italy were enrolled to describe antenatal and postpartum care services use.

Survey instrument

Written consent was acquired prior to interview. A structured questionnaire (available as online supplementary file) was used to collect data from each participant. Questionnaires were administered by physicians competent in interview methods, with help, when necessary, from a cultural mediator. The interviews lasted 10 min on average.

A pilot study was undertaken. Validation of the survey instrument was performed through the assessment of internal and test-retest (external) reliability in addition to face and content validity. Test-retest reliability was checked in the pilot study through an additional interview of 50 women within a time interval of 20 days from the first administration of the questionnaire. Face and content validity were examined in order to assess the clarity of the wording of the items which in turn generated new items. Modifications were made according to the comments recorded by the women in order to clarify the content of the questionnaire and to simplify its wording.

Outcomes and covariates

Sociodemographics included information on gender, age, marital and legal status, education level, religion, nationality, working activity, duration of residence in Italy. The questions on lifestyle and health status included information on physical activity, smoking habits, alcohol consumption, chronic and infectious diseases. The questions on participation in screening programme included breast and cervical CS practices. Uptake of cervical CS was determined by asking 'Have you ever undergone Pap test for control without any symptoms?'. Women who answered affirmatively were asked 'When was the last time you underwent Pap test?'. Women who had undergone a Pap test within the previous 3 years were considered as 'uptake', corresponding to women who comply with the recommended screening period. Uptake of breast CS was determined by asking, 'Have you ever undergone a mammography for control without any symptoms?'. Women who answered affirmatively were asked a second

question, 'When was the last time you had a mammography?'. Women who reported that they had had their most recent mammography within the previous 2 years were considered as 'uptake', corresponding to women who comply with the recommended screening period.

The questionnaire also contained items on services utilisation during pregnancy and childbirth. Access to antenatal and postnatal care was assessed by number and timing of examination, such as time of first pregnancy appointment, number of prenatal visits and echographies, antenatal care by healthcare professionals including general practitioner (GP), gynaecologist, nurse, midwife/obstetrician or other care providers, prenatal screening and diagnostic testing (ie, maternal serum markers such as beta human chorionic gonadotropin, pregnancy-associated plasma protein A, amniocentesis, etc), smoking habits during pregnancy, counselling on infant feeding and postpartum contraceptive methods, reasons for access to maternal and newborn healthcare services (family planning centres and child care service centres). All information was self-reported.

The study protocol was ratified by the Institutional Ethical Committee ('Mater Domini' Hospital of Catanzaro, Italy) (20 April 2012).

Statistical analysis

Descriptive analyses were used to describe demographic characteristics and lifestyle habits of the immigrant women. Data were summarised into frequencies and percentages. Univariate analysis was conducted by using χ^2 or Fisher's exact tests to assess relationships between cervical and breast CS behaviour and the respective eligible study subgroups.

Multivariate logistic regression analysis was performed. One model was developed in which those variables potentially associated with having received cervical CS through Pap smear in the previous 3 years (model 1) (0=no, 1=yes) were included. Women who had had a Pap smear not for screening purposes were included in the 'no' option of the outcome variable. The model building strategy consisted of the following steps: (1) bivariate analysis was performed for each of the potential explanatory variables to find out which coding (categorical, ordinal, continuous) better fitted the data and we chose that in the multivariate analysis; (2) multiple logistic regression was performed. Adjusted ORs and 95% CIs were calculated; (3) on the basis of the results of the bivariate analysis, the coding of the explanatory variables included in the model was the following: age (continuous), marital status (1=married, 2=other), children (1=no, 2=yes), education level (ordinal: 1= \leq 7 years, 2=8–13 years, 3=university degree), employment status (four categories: 1=unemployed, 2=housekeeper, caregiver, 3>manual worker; 4=sedentary workers) included as a dummy variable with the unemployed being the reference category, nationality (four categories: 1=European, 2=African, 3=Asian, 4=South American) included as a dummy variable with the European being the reference

category, length of stay in Italy (ordinal: 1=1–2 years, 2=3–5 years, 3=6–8 years, 4= \geq 9 years), self-reported legal status (1=regular, 2=irregular), chronic diseases (1=no, 2=yes), physical activity (1=no, 2=yes), current smoker (1=no, 2=yes), alcohol consumption in the previous 30 days (1=no, 2=yes). The data were analysed using the Stata software programme, V.11.2.³⁰

RESULTS

Of the 503 immigrant women who were approached for the study, 492 met at least one of the inclusion criteria and 464 were enrolled, giving a participation rate of 94.3%. The main characteristics of the study population were reported in [table 1](#). The participants were between the ages of 18 and 70 years (mean 40.1 years) and only 14.6% had obtained university degree. More than half (58.8%) of women were housekeepers or caregivers. A low percentage (9.9%) declared to be irregular. One hundred and sixty-four (34.5%) had been living in Italy for 9 years or more. Paid employment was the most common reason for migration (65.8%) among participants. Most women were from Europe (46.3%) and the main country of origin was Ukraine (25.8%). Only 19.3% were current smokers. The vast majority of women (71.3%) reported no alcohol drinking in the previous 30 days. About 49% of the respondents were affected by chronic diseases.

Three different subgroups were included in the final sample: sexually active women between 25 and 64 years of age without hysterectomy who were eligible for participation in cervical CS (419); women aged 50–69 years without previous diagnosis of invasive or in situ breast cancer who were eligible for participation in breast CS (125) and women of any age who had delivered at least once in Italy who were eligible to access antenatal and postpartum care services (123). Seven women were part of the three subgroups.

The mean age of the population eligible for cervical CS was 41.1 years with an age range between 25 and 64 years. More than half (58.1%) were married and 247 (58.9%) had completed high school. About 60% were housekeepers or caregivers. Rate of cervical CS among the 419 eligible women was low (39.1%), and about one-third had had a Pap test for screening purposes (32.8%) within a 3-year period from interview ([table 2](#)). Having had a routine Pap smear in the previous 3 years was significantly more likely in women with longer duration of residence in Italy (OR=1.60; 95% CI 1.29 to 1.97; $p<0.001$) and in South American women (OR=8.36; 95% CI 1.99 to 35.06; $p=0.004$) compared with European female immigrants, whereas a lower probability of cervical CS participation was found in Asian women (OR=0.41; 95% CI 0.22 to 0.76; $p=0.005$) compared with European female immigrants ([table 3](#)).

Among the 125 women considered eligible for breast CS, 43.2% were married and 71 (56.4%) had completed high school. More than three-quarters (85.7%) were

Table 1 Distribution of characteristics among the total study population and eligible women having undergone cervical and breast cancer screening (CS)

Characteristic	Total (464)	Cervical CS		Breast CS	
	n (%)	Eligible women (419) n (%)	Adherence to recommendations (164) n (%)	Eligible women (125) n (%)	Adherence to recommendations (57) n (%)
Age, years					
18–30	92 (19.8)	84 (20)	28 (33.3)	–	–
31–40	141 (30.4)	127 (30.3)	42 (33.1)	–	–
41–50	117 (25.2)	113 (27)	53 (46.9)	12 (9.6)	7 (58.3)
≥51	114 (24.6)	95 (22.7)	41 (43.2)	113 (90.4)	50 (44.2)
			Trend $\chi^2=6.64$, 3 df, $p=0.084$	Trend $\chi^2=0.86$, 1 df, $p=0.353$	
Education level, years					
≤7	121 (26.1)	112 (26.8)	48 (42.9)	27 (21.6)	13 (48.2)
8–13	275 (59.3)	247 (58.9)	86 (34.8)	70 (56)	29 (41.4)
>13, with university degree	68 (14.6)	60 (14.3)	30 (50)	28 (22.4)	15 (53.6)
			$\chi^2=5.56$, 2 df, $p=0.062$	$\chi^2=1.28$, 2 df, $p=0.528$	
Marital status*					
Married	260 (56.3)	243 (58.1)	99 (40.7)	54 (43.5)	25 (46.3)
Other	202 (43.7)	175 (41.9)	64 (36.6)	70 (56.5)	31 (44.3)
			$\chi^2=0.74$, 1 df, $p=0.389$	$\chi^2=0.05$, 1 df, $p=0.823$	
Children					
No	115 (24.8)	98 (23.4)	30 (30.6)	17 (13.6)	7 (41.2)
Yes	349 (75.2)	321 (76.6)	134 (41.7)	108 (86.4)	50 (46.3)
			$\chi^2=3.91$, 1 df, $p=0.048$	$\chi^2=0.16$, 1 df, $p=0.694$	
Employment status					
Unemployed	147 (31.7)	129 (30.8)	55 (42.6)	30 (24)	14 (46.7)
Housekeeper, caregiver	273 (58.8)	255 (60.9)	90 (35.3)	85 (68)	40 (47.1)
Manual worker	24 (5.2)	16 (3.8)	8 (50)	7 (5.6)	1 (14.3)
Sedentary worker	20 (4.3)	19 (4.5)	11 (57.9)	3 (2.4)	2 (66.7)
			$\chi^2=5.84$, 3 df, $p=0.120$	Fisher's exact=3.36, $p=0.339$	
Nationality					
European	215 (46.3)	197 (47)	76 (38.6)	81 (64.8)	35 (43.2)
African	138 (29.8)	123 (29.4)	55 (44.7)	19 (15.2)	9 (47.4)
Asian	98 (21.1)	86 (20.5)	23 (26.7)	24 (19.2)	12 (50)
American	13 (2.8)	13 (3.1)	10 (76.9)	1 (0.8)	1 (100)
			$\chi^2=14.97$, 3 df, $p=0.002$	Fisher's exact=1.59, $p=0.661$	
Self-reported legal status					
Regular	418 (90.1)	375 (89.5)	154 (41.1)	108 (86.4)	54 (50)
Irregular	46 (9.9)	44 (10.5)	10 (22.7)	17 (13.6)	3 (17.7)
			$\chi^2=5.56$, 1 df, $p=0.018$	Fisher's exact=6.20, $p=0.013$	
Length of stay in Italy, years					
1–2	83 (17.9)	74 (17.7)	16 (21.6)	19 (15.2)	3 (15.8)

Continued

Table 1 Continued

Characteristic	Total (464) n (%)	Cervical CS		Breast CS	
		Eligible women (419) n (%)	Adherence to recommendations (164) n (%)	Eligible women (125) n (%)	Adherence to recommendations (57) n (%)
3–5	124 (26.7)	108 (25.7)	24 (22.2)	20 (16)	6 (30)
6–8	97 (20.9)	95 (22.7)	45 (47.4)	21 (16.8)	10 (47.6)
≥9	160 (34.5)	142(33.9)	79 (55.6)	65 (28)	38 (58.5)
			Trend $\chi^2=41.33$, 3 df, $p<0.001$		Trend $\chi^2=13.03$, 3 df, $p=0.005$
Physical activity*					
No	157 (34.9)	139 (34.2)	57 (41)	44 (35.2)	18 (40.9)
Yes	293 (65.1)	267 (65.8)	102 (38.2)	81 (64.8)	39 (48.2)
			$\chi^2=0.30$, 1 df, $p=0.583$		$\chi^2=0.60$, 1 df, $p=0.438$
Alcohol consumption in the previous 30 days*					
No	321 (71.3)	288 (70.9)	113 (39.2)	81 (64.8)	38 (46.9)
Yes	129 (28.7)	118 (29.1)	46 (39)	44 (35.2)	19 (43.2)
			$\chi^2<0.001$, 1 df, $p=0.962$		$\chi^2=0.16$, 1 df, $p=0.689$
Current smoker*					
No	363 (80.7)	324 (79.8)	127 (39.2)	95 (76)	45 (47.4)
Yes	87 (19.3)	82 (20.2)	32 (39)	30 (24)	12 (40)
			$\chi^2<0.001$, 1 df, $p=0.977$		$\chi^2=0.50$, 1 df, $p=0.480$
Chronic diseases*					
No	227 (50.8)	201 (49.9)	64 (31.8)	29 (23.2)	12 (41.4)
Yes	220 (49.2)	202 (50.1)	94 (46.5)	96 (76.8)	45 (46.9)
			$\chi^2=9.13$, 1 df, $p=0.003$		$\chi^2=0.27$, 1 df, $p=0.603$

*Sums may not be equal to the total because of missing values.
CS, cancer screening.

practising Christians religion and 65.1% were from Europe. More than half (51.6%) had been living in Italy for 9 years or more and the vast majority (86.5%) had a regular residence permit. Regarding breast CS practices, of the 125 eligible women 45.6% had had a mammography for control purposes, but less than a quarter (26, 20.8%) had their mammography within the recommended time interval of 2 years (table 2). Results from univariate analysis do not show a statistically significant difference in breast CS adherence with respect to all the selected characteristics apart from duration of stay in Italy, ranging from 15.8% among those women having resided in the country for ≤ 2 years to 58.5% among women with a length of stay ≥ 9 years, and among those who self-reported an irregular legal status (17.7%) versus a regular status (50%) (table 1).

Table 4 shows main pregnancy, antenatal and post-birth care characteristics of the eligible population. The number of immigrant women who delivered in Italy at least once was 123. The mean age of the population eligible was 34.9 years with an age range between 19 and 54 years. About 80% of the respondents did not report

difficulties of access and use of prenatal and postpartum services. In terms of prenatal care, 70.9% of immigrant women had their first pregnancy appointment within 12 weeks of pregnancy and 84.2% had two or more prenatal visits. Only 12.9% of mothers underwent fewer than two prenatal ultrasound checks. More than half (56.3%) of pregnant women were not submitted to prenatal diagnostic testing (maternal serum markers such as beta human chorionic gonadotropin, pregnancy-associated plasma protein A, amniocentesis) (data not shown). Only about one-third (27%) of respondents participated in prepartum course, although Italian National Health Service guarantees free access to this healthcare service. The vast majority (86%) of mothers chose a paediatrician such as their child's physician, whereas the remaining part of the sample preferred a specialist or a maternal healthcare centre physician or none at all. Moreover, among immigrant women with children living in Italy (122), 115 (94.3%) chose to immunise their children with mandatory and recommended vaccinations for infants included in the national programme.

Table 2 Cervical and breast cancers screening (CS) practice

CS services	No	Per cent
Cervix (419)*		
Having received cervical CS through Pap test		
No	247	59
Yes, for control	164	39.1
Yes, I had problems	8	1.9
Time since last Pap test, years		
≤3	135	32.8
>3 or never	283	67.5
Breast (125)†		
Having received breast CS through mammography		
No	61	48.8
Yes, for control	57	45.6
Yes, I had problems	7	5.6
Time since last mammogram, years		
≤2	26	20.8
>2 or never	99	79.2

*All sexually active women aged 25–64 years and having an intact uterus were eligible.

†Women aged 50–69 years without previous diagnosis of invasive or in situ breast cancer were eligible.

DISCUSSION

The present study sought to describe CS practices, antenatal and postpartum care services use among a sample of age eligible immigrant women in the South of Italy.

The existence of a notable difference in preventive practice utilisation and motherhood protection according to immigration status has been reported in previous studies.^{24 31–33} Immigrant women may not be accustomed to having regular health check-ups in their home countries and may be less familiar with the opportunity of routine screening to detect health problems before the onset of symptoms.³⁴ These shortcomings may reduce the women's ability to maintain their health in specific periods during their lifetime (eg, during pregnancy) and to participate in preventive care.

In our immigrant sample, adherence to cervical (32.8%) and breast (20.8%) CS recommended practices is discernibly much lower than those reported in several studies^{9 35} and lower than those of the Italian native populations.³⁶ Indeed, the percentage of Italian women who underwent routine cervical and breast CS were 77% and 71%, respectively.³⁶ It is possible that the differences between our sample population and other samples studies could be due to differences in cultural and socioeconomic factors. Furthermore, one must consider that in Italy there is a geographical difference in CS coverage, with the highest percentage of women who actually participate in them being in the north of

the country and the lowest in the south.³⁷ One reason for the low coverage for CS in our sample may be due to the fact that in the regions in the South of the country, a screening programme has only recently been organised. In fact in our area of study, among native citizens, CS for early detection of breast and cervical cancers has reached less than half of the target population: regional figures have shown that cervical and breast CS rates are as low as 58.3%³⁸ and 49.7%,³⁹ respectively. Although these are much lower than the national figures, nonetheless, they are still higher than those of the immigrant women in our sample.

Only less than a quarter of the sample had received breast CS at the recommended time intervals, and for this reason efforts should be made to emphasise that it is not enough to get screened once or sporadically.

The duration of residence in the host country may be a significant predictor of whether a migrant adheres to the CS programme.⁴⁰ The results of our study indicate that being a recent immigrant is a barrier to receiving cervical CS. Certainly women who have spent more time in Italy may be more likely to be integrated into the screening programme and proficient in the Italian language, and therefore feel more confident approaching the Italian healthcare system. Hence it would be prudent to provide immigrants with culturally sensitive and specific information to overcome any barriers. Organised screening programme may help to reduce 'ethnic' disparities by offering a systematic (and free) examination to all the women of the target age groups, and by using specific strategies to reach the most underserved women. Longer duration of stay in Italy could also reflect probability of receiving a personal invitation. The importance of invitation letters has been mentioned,^{41 42} and one way of overcoming a language barrier is to send the letter written in the language of the individual migrant as well as that of the country in which they reside.

Our study showed that Asian immigrant women had a lower rate of Pap testing when compared with European immigrant women. The Pap smear is a more personal and invasive procedure that may pose particular cultural barriers and thus can hinder these women from obtaining the appropriate services.⁴³ Culturally tailored messages are important to promote screening in specific ethnic groups to enable the identification of the target group with these messages. The message must reflect the same values and beliefs of the target group, and it should accommodate literacy levels to ensure comprehension. Working closely with the target group is also crucial to ensure screening participation. It would be important for program developers to contact ethnic group gatekeepers, such as key religious or community leaders.

Immigrant women in our study have experienced an acceptable level of care during pregnancy and childbirth. We also found that education and advice for breast feeding and newborn care could be improved in our sample.

Table 3 Multiple logistic regression analysis between variables potentially associated with having received a Pap smear in the previous 3 years

Variable	OR	SE	95% CI	p Value
Model outcome: Pap smear for screening purposes in the previous 3 years				
Log-likelihood=-227.53, $\chi^2=50.97$, p value<0.0001, No of obs=402*				
Length of stay in Italy, ordinal	1.64	0.21	1.28 to 2.1	<0.001
Nationality				
European†	1.00	–	–	–
South American	7.87	6.14	1.7 to 36.32	0.008
Asian	0.35	0.13	0.17 to 0.72	0.004
African	0.74	0.27	0.36 to 1.51	0.411
Employment status				
Unemployed†	1.00	–	–	–
Housekeeper, caregiver	0.7	0.19	0.4 to 1.2	0.198
Manual workers	0.58	0.36	0.17 to 1.95	0.374
Sedentary workers	0.85	0.53	0.25 to 2.87	0.798
Chronic diseases				
No†	1.00	–	–	–
Yes	1.37	0.34	0.84 to 2.21	0.204
Marital status				
Married†	1.00	–	–	–
Not married	0.73	0.19	0.44 to 1.22	0.228
Alcohol consumption in the previous 30 days				
No†	1.00	–	–	–
Yes	0.75	0.22	0.42 to 1.32	0.312
Physical activity				
No†	1.00	–	–	–
Yes	0.83	0.21	0.5 to 1.36	0.457
Age, continuous	1.07	0.14	0.83 to 1.39	0.601
Self-reported legal status				
Regular†	1.00	–	–	–
Irregular	1.18	0.52	0.5 to 2.79	0.704
Education level, years				
≤7	1.03	0.42	0.46 to 2.31	0.944
8–13	0.65	0.22	0.33 to 1.25	0.195
>13, with university degree†	1.00	–	–	–

*The observations do not sum to 419 due to missing values.

†Reference category.

In general, one way of reducing barriers for participation would be for healthcare professionals to introduce immigrant women to preventive care. In particular, GPs could play an important role in this respect, especially when one takes into account that a survey conducted among immigrant populations in the same area showed that 85% of the sample had access to a GP at least once, indicating that immigrants in the area of study had adequate access to primary care.²⁹ As a result, the acculturation process into the healthcare system could be shortened.

Strength and limitations of the study

The strengths of the study lie in the enrolment technique and the high participation rate. A physician not involved in providing healthcare to the migrants was chosen to complete the interviews as it was our belief that this would make the participants more confident in reporting all aspects of healthcare they had received. Furthermore, the physician was supported by linguistic and cultural mediators to help those who could not speak Italian or with low literacy skills. Moreover, the 94.3% participation rate is very satisfactory, reducing a major source of bias,

Table 4 Pregnancy, antenatal and postpartum care characteristics of the eligible women and comparison with Italian population

Characteristic	n (%)	Mean±SD (%) ⁴¹	Italian population (%)
Age, years		34.9±8.9	32
Pregnancies in Italy (123)			
1	90 (73.2)		53.9
≥2	33 (26.8)		46.1
Smoking status (123)			
Non-smoker	98 (79.7)		68.1
Smoker before pregnancy	14 (11.4)		24.4
Smoker	11 (8.9)		7.5
Prepartum course participation (122)			
No	89 (73)		60.5
Yes	33 (27)		39.5
Visit after delivery (within 12 months) (119)			
Yes	95 (79.8)		–
No	24 (20.2)		–
Counselling on postpartum contraceptive methods (122)			
No	66 (54.1)		40.9
Yes	56 (45.9)		59.1
Infant feeding (122)			
Breast feeding only	85 (69.6)		88.5
Breast feeding and bottle-feeding	24 (19.7)		
Bottle-feeding only	13 (10.7)		11.5
Utilisation of family planning clinic (121)			
Yes	66 (54.5)		27.9
No	55 (45.5)		72.1

The number of participants responding to the questions is indicated in parentheses.

and we believe this is related to the great efforts of the survey researchers in promoting migrant involvement in the study.

Our findings are subject to some limitations. First, we used a convenience sampling method, and this factor limits the generalisability of the results. Furthermore, we chose locations of focus due to logistical constraints, and, therefore, the study sample was composed of people connected to NPOs that assist migrant population and also mediated healthcare encounters. Therefore the views expressed may be different from migrants who have no such connection to those organisations. Furthermore, a large proportion of our migrant participants had a regular residence permit which carries with it health insurance cover, which again is not the case with irregular immigrants. Therefore, the sample may not be representative of all immigrants within

the region, but only of those connected to NPOs and with a regular stay permit.

Moreover, the cross-sectional design of our study could not capture temporal changes in the ability of immigrants to use and access health services. There may be an effect of recall bias on self-reported information about CS practices: women frequently tend to over-report their use of Pap test or mammogram and under-report the time lapse since their last screening. We have attempted to minimise these biases by conducting the survey with the use of access measures that are less subjective and measure patient experience, not simply satisfaction. Moreover, there may be women who were pregnant in Italy some years ago and, unintentionally, gave incorrect information due to poor or incomplete memory recall. However, given that the mean age of women in this subgroup is 34.9 years, it is likely that the mean time from pregnancy would have been within an acceptable time range, thus, minimising recall bias.

CONCLUSION

Even with these potential limitations, this study provides currently unavailable information about preventive care utilisation among immigrant women in Italy that could encourage future research to develop and test culturally appropriate, women-centred strategies for promoting timely and regular CS and to better understand the factors that predict maternal and child health services utilisation and identify potential targets for intervention among immigrant women.

Acknowledgements The authors thank all cultural and linguistic mediators and the staff at non-profit organisations who contributed to the survey and also thank all the study participants.

Contributors AB, CGAN, EL and CP collected the data and contributed to the data analysis and interpretation. AB and MP designed the study, were responsible for the data analysis and interpretation and wrote the article. AB and MP are guarantors for the study.

Competing interests None declared.

Ethics approval Institutional Ethical Committee ('Mater Domini' Hospital of Catanzaro, Italy) (20 April 2012).

Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement Survey data will be available on request from the authors.

Open Access This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

© Article author(s) (or their employer(s) unless otherwise stated in the text of the article) 2017. All rights reserved. No commercial use is permitted unless otherwise expressly granted.

REFERENCES

1. United Nations, Population Division, Department of Economic and Social Affairs (UN DESA). Trends in International Migrants Stock: The 2015 Revision (POP/DB/MIG/Stock/Rev.2015, Table 1). http://www.un.org/en/development/desa/population/migration/data/estimates2/data/UN_MigrantStockTotal_201 (accessed 6 Dec 2016).

2. Liácer A, Zunzunegui MV, del Amo J, *et al.* The contribution of a gender perspective to the understanding of migrants' health. *J Epidemiol Community Health* 2007;61 Suppl 2:ii4-ii10.
3. Almeida LM, Caldas JP, Ayres-de-Campos D, *et al.* Assessing maternal healthcare inequities among migrants: a qualitative study. *Cad Saude Publica* 2014;30:333-40.
4. Bollini P, Stotzer U, Wanner P. Pregnancy outcomes and migration in Switzerland: results from a focus group study. *Int J Public Health* 2007;52:78-86.
5. Bustreo F. Promoting health through the life-course. Ten top issues for women's health. World Health Organization. <http://www.who.int/life-course/news/commentaries/2015-intl-womens-day/en/> (accessed 22 Nov 2016).
6. Nelson NJ. Migrant studies aid the search for factors linked to breast cancer risk. *J Natl Cancer Inst* 2006;98:436-8.
7. Daly B, Olopade OI. Race, ethnicity, and the diagnosis of breast cancer. *JAMA* 2015;313:141-2.
8. Roberts D. Debating the cause of health disparities - implications for bioethics and racial equality. *Camb Q Health Ethics* 2012;21:332-41.
9. Torre LA, Siegel RL, Ward EM, *et al.* Global Cancer Incidence and Mortality Rates and Trends-an update. *Cancer Epidemiol Biomarkers Prev* 2016;25:16-27.
10. Harcourt N, Ghebre RG, Whembolua GL, *et al.* Factors associated with breast and cervical cancer screening behavior among African immigrant women in Minnesota. *J Immigr Minor Health* 2014;16:450-6.
11. Grillo F, Vallée J, Chauvin P. Inequalities in cervical cancer screening for women with or without a regular consulting in primary care for gynaecological health, in Paris, France. *Prev Med* 2012;54:259-65.
12. Norredam M, Nielsen SS, Krasnik A. Migrants' utilization of somatic healthcare services in Europe-a systematic review. *Eur J Public Health* 2010;20:555-63.
13. Schueler KM, Chu PW, Smith-Bindman R. Factors associated with mammography utilization: a systematic quantitative review of the literature. *J Womens Health* 2008;17:1477-98.
14. Kristiansen M, Thorsted BL, Krasnik A, *et al.* Participation in mammography screening among migrants and non-migrants in Denmark. *Acta Oncol* 2012;51:28-36.
15. Ghafoor A, Jemal A, Ward E, *et al.* Trends in breast cancer by race and ethnicity. *CA Cancer J Clin* 2003;53:342-55.
16. Nerbs MV, Mark HF. Breast cancer among Asian women. *Med Health RI* 1996;79:388-91.
17. O'Malley MS, Earp JA, Hawley ST, *et al.* The association of race/ethnicity, socioeconomic status, and physician recommendation for mammography: who gets the message about breast cancer screening? *Am J Public Health* 2001;91:49-54.
18. Frisby CM. Messages of hope: Health communications strategies that address barriers preventing black women from screening for breast cancer. *J Black Stud* 2002;32:489-505 <http://www.jstor.org/stable/3180949>.
19. Centers for Disease Control and Prevention. Achievements in public health, 1900-1999: Healthier mothers and babies. *MMWR* 1999;48:849-58.
20. Yuan B, Qian X, Thomsen S. Disadvantaged populations in maternal health in China who and why? *Glob Health Action* 2013;6:19542.
21. Kusuma YS, Kumari R, Kaushal S. Migration and access to maternal healthcare: determinants of adequate antenatal care and institutional delivery among socio-economically disadvantaged migrants in Delhi, India. *Trop Med Int Health* 2013;18:1202-10.
22. Lauria L, Bonciani M, Spinelli A, *et al.* Inequalities in maternal care in Italy: the role of socioeconomic and migrant status. *Ann Ist Super Sanita* 2013;49:209-18.
23. Singh PK, Rai RK, Singh L. Examining the effect of household wealth and migration status on safe delivery care in urban India, 1992-2006. *PLoS One* 2012;7:e44901.
24. Bollini P, Pampallona S, Wanner P, *et al.* Pregnancy outcome of migrant women and integration policy: a systematic review of the international literature. *Soc Sci Med* 2009;68:452-61.
25. Gissler M, Alexander S, MacFarlane A, *et al.* Stillbirths and infant deaths among migrants in industrialized countries. *Acta Obstet Gynecol Scand* 2009;88:134-48.
26. Balaam MC, Akerjordet K, Lyberg A, *et al.* A qualitative review of migrant women's perceptions of their needs and experiences related to pregnancy and childbirth. *J Adv Nurs* 2013;69:1919-30.
27. Gibson-Helm ME, Teede HJ, Cheng IH, *et al.* Maternal health and pregnancy outcomes comparing migrant women born in humanitarian and nonhumanitarian source countries: a retrospective, observational study. *Birth* 2015;42:116-24.
28. The World Bank. World Bank Open Data. 2011 <http://data.worldbank.org/> (accessed 22 Jul 2014).
29. Bianco A, Larosa E, Pileggi C, *et al.* Utilization of health-care services among immigrants recruited through non-profit organizations in southern Italy. *Int J Public Health* 2016;61:673-82.
30. StataCorp. *Stata: Release 11. Statistical Software.* College Station, TX: StataCorp, 2009.
31. Ricardo-Rodrigues I, Jiménez-García R, Hernández-Barrera V, *et al.* Social disparities in access to breast and cervical cancer screening by women living in Spain. *Public Health* 2015;129:881-8.
32. Rondet C, Lapostolle A, Soler M, *et al.* Are immigrants and nationals born to immigrants at higher risk for delayed or no lifetime breast and cervical cancer screening? The results from a population-based survey in Paris metropolitan area in 2010. *PLoS One* 2014;9:e87046.
33. Almeida LM, Caldas J, Ayres-de-Campos D, *et al.* Maternal healthcare in migrants: a systematic review. *Matern Child Health J* 2013;17:1346-54.
34. Grandahl M, Tydén T, Gottvall M, *et al.* Immigrant women's experiences and views on the prevention of cervical cancer: a qualitative study. *Health Expect* 2015;18:344-54.
35. Hasnain M, Menon U, Ferrans CE, *et al.* Breast cancer screening practices among first-generation immigrant muslim women. *J Womens Health* 2014;23:602-12.
36. Campostrini S, Carrozzini G, Salmaso S, Severoni S, *et al*; eds. *Malattie croniche e migranti in Italia. Rapporto sui comportamenti a rischio, prevenzione e diseguglianze di salute.* Venezia: Organizzazione Mondiale della Sanità - Istituto Superiore della Sanità - Università Ca' Foscari, 2015.
37. Epidemiologia & prevenzione. The National Centre for Screening Monitoring Tenth Report. *Epidemiol Prev* 2012;36:1-96 <http://www.osservatorionazionale screening.it/sites/default/files/allegati/EPv36i6s1.pdf>.
38. La sorveglianza PASSI. Screening mammografico 2012-2015. <http://www.epicentro.iss.it/passi/dati/ScreeningCervicale.asp> (accessed 10 Apr 2017).
39. La sorveglianza PASSI. Screening cervicale 2012-2015. <http://www.epicentro.iss.it/passi/dati/ScreeningMammografico.asp> (accessed 10 Apr 2017).
40. Vahabi M, Lofters A, Kumar M, *et al.* Breast cancer screening disparities among urban immigrants: a population-based study in Ontario, Canada. *BMC Public Health* 2015;15:679.
41. Blomberg K, Tishelman C, Ternstedt BM, *et al.* How can young women be encouraged to attend cervical cancer screening? Suggestions from face-to-face and internet focus group discussions with 30-year-old women in Stockholm, Sweden. *Acta Oncol* 2011;50:112-20.
42. Everett T, Bryant A, Griffin MF, *et al.* Interventions targeted at women to encourage the uptake of cervical screening. *Cochrane Database Syst Rev* 2011;5:CD002834.
43. Abdullahi A, Copping J, Kessel A, *et al.* Cervical screening: Perceptions and barriers to uptake among Somali women in Camden. *Public Health* 2009;123:680-5.