PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Cervical and breast cancer screening participation and utilization of maternal health services: a cross-sectional study among immigrant women in Southern Italy
AUTHORS	Bianco, Aida; Larosa, Elisabetta; Pileggi, Claudia; Nobile, Carmelo; PAVIA, Maria

VERSION 1 - REVIEW

REVIEWER	Italo F. Angelillo University of Campania, Naples, Italy
REVIEW RETURNED	17-Feb-2017

GENERAL COMMENTS	The paper sheds light on access to breast and cervical cancer screening and to healthcare services during pregnancy, childbirth and the postpartum period for a convenience sample of age eligible immigrant women to Southern Italy. This is of heightened policy interest. Migrants tend to be the most vulnerable population groups when it comes to healthcare and this study is an important contribution to the literature on this topic. The survey is novel in that its recruitment sample is from non-profit organizations (NPOs). The response rate is very high, truly impressive. The analyses were complete and carefully done. Interesting findings were obtained. The limitation section is nicely written and lays out the major methodological concerns of generalization and selection bias. Kudos to the authors for their efforts. I have some minor comments. Methods: 1. No information is given about a pilot study. Did the authors failed to conduct it? If not, please, mention it the method section. 2. The third paragraph of the methods is too long. Please, make it more concise. 3. The authors failed to describe if the questionnaire has been validated. Results: 4. The authors report a lot of results regarding healthcare services utilization during pregnancy, childbirth and the postpartum period in the result section. I suggest to delete the results that are reported in Table 3. Discussion 5. The first paragraph of the Strength and limitations of the study is too long. Please, make it more concise clarifying if linguistic and

cultural mediators helped physicians with those women who could not speak Italian.

6. In the 2nd paragraph of the Strength and limitations of the study the authors wrote: "We found that the vast majority of participants had a regular residence permit and, consequently, health insurance coverage, and we acknowledge that irregular immigrants have been underrepresented." The sentence should be rephrased by "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."

7. I suggest, in the Conclusion section, the authors should emphasize that future research should aim to better understand the factors that predict maternal and child health services utilization and identify potential targets for intervention among immigrant women.

8. Please, check the references and be more consistent.

REVIEWER	Panayotis Constantinou INSERM, Centre for Research in Epidemiology and Population Health, FRANCE
REVIEW RETURNED	14-Mar-2017

GENERAL COMMENTS	Overall comment

In this study, the authors report the results of a survey on cancer screening practices and perinatal care utilization, conducted in Southern Italy among immigrant women from low and middle-income countries. The topic is important and unfortunately very timely and the results of the survey are of interest to the international scientific community. However, the manuscript has some very important limitations and does not seem suitable for publication in its current form.

My three main comments are the following :
. the rationale and the methodology are not sufficiently clear and all the sections (in particular the "methods" section) could benefit from a rearrangement of the content to reach a more clear and straightforward structure;
. there are some major imprecisions or errors (or typos) in the presentation of the results;
. the enrolment process (through NGO) and the possible overrepresentation of regular migrants is an important aspect of this study and I believe you should develop a little bit more this issue throughout the manuscript. In its current form, the reader is referred to reference 19 for sample selection details and the issue is not mentioned before the discussion section.

Abstract

1) page 2, lines 28-30: it seems to me that the rationale could be more clearly presented if it followed the following structure: migration, health among women migrants, screening and perinatal practices among migrant women. Please refer also to comment n°4

2) page 2, lines 35-40: I believe that enrolment through NGO should be mentioned

3) page 2, lines 44-45: I believe it is "among women eligible for

breast cancer screening" (n=125) and not "among women with mammogram" (n=64)

Background major comments

4) page 5, lines75-78: it seems more suitable to the construction of the rationale to place the sentence on the population of migrants (lines 77-78) before the sentence on cancer screening and maternal health (lines 75-76). Also, it does not seem necessary to have a distinct paragraph for lines 75-78. The rationale could be : §1 on migration and women's health among migrants; §2 on cancer screening; §3 on pregnancy and childbirth

5) page 5, lines 87-91: the authors should be more precise about the "improvements" or the "worse maternal health" mentioned and should include a reference, as they do in the paragraph on cancer screening ("advanced-stage diagnosis" or "mortality" mentioned in line 85)

Background minor comments

6) page 5, line 81: typo "(…) noted among immigrants" (?)

7) page 5, lines 89-91: sentence unclear, to be reformulated. For example : "studies on the determinants of maternal health care delivery suggest that social, economic,…factors explain the worse health among migrants, when compared with…"

Methods major comments

8) The authors should consider a more clear structure for the method section, including for example a "study population" paragraph (lines 119-122, 102-106), an "outcomes" paragraph (122-142) or "covariates" paragraph (lines 115-118) alongside the "survey instrument" paragraph (lines 97-101, 107-114)

9) page 6, lines 102-106: the rationale for the selection of the study population (appears in page 7, lines 119-122) should be presented before the definition of the inclusion criteria.

10) page 8, line 151: Does "potentially associated" designate the initial set of variables tested in bivariate analysis or the final variables included?

Methods minor comments

11) page 6, lines 97-100: the term "survey" should be mentioned earlier (in study's objectives ?) or should be presented more precisely in a short sentence. I understand this survey "has been presented elsewhere (lines 101-102)", but at the end of the background section, the readers do not know what the type of the presented study is.

12) page 8, line 149: "explanatory variables" and "outcomes" have not been clearly defined in the previous paragraphs

13) page 8, lines 150-155: reformulation needed. For the model specification strategy, the authors should more clearly distinguish

the methodology for variable coding (lines 153-155: continuous, ordinal, categorical, dummy coding) from the methodology for variable selection (lines 166-168: stepwise).

Results major comments

14) Sample sizes and population selection process should be more clearly stated throughout the results section. It would facilitate the reader if both number of observations and percentages were mentioned throughout the results section. For example, it is not clear what is the overall population considered in page 10, line 210: "207 women, representing 96.7%" (of ?)

15) page 9, lines 185-187: there seems to be a confusion in the text about the denominator of this ratio: 0.208 = 25/125, but 125 is the number of eligible women and not "those who had a mammogram" (n=64) among eligible women

16) page 9, lines 187-189: results are not clear (the reference group is not mentioned here) and there also seems to be a confusion: the Odds Ratio for Asian women indicates a lower probability of screening participation than European women

17) Table 1, variables: the authors should mention in the text if the "Yes, I had problems" observations were included or excluded from the outcome variable in the multivariate model. You seem to have included these observations (n=125 for both variables). It could be another option to exclude mammograms for symptoms from the population assessed for screening participation.

18) Table 2, title: "several variables" is not informative about the selection process: it does not seem to be only the significant variables since the "employment status" is not significantly associated with screening uptake.

19) Table 2, model information: the authors should mention the selection process for the sample size: from n=418 (Table 1) to n=402 (Table 2) (probably due to missing values for the explanatory variables ?)

Results minor comments

20) page 9, lines 179-181: study sample size should be mentioned at the beginning of the results section

21) page 9, lines 194-200: it should be mentioned that the results presented in these lines are not shown in Table 3

22) Table 1, title: "cancer (…) practices among…"

23) Table 1, content: the authors should add the "total sample size" in order to help the reader compare with the text

24) Table 1, footnotes: inclusion and exclusion criteria are not always consistent with the text ("sexually active" not mentioned in the text and exclusion criteria for mammography uptake not mentioned in the table)

Discussion major comments

25) page 10, line214: "antenatal care" is not strictly correct as you also describe post-partum care.

26) page 11, lines 251-252: not supported by data. Please refer also to comment n°16

27) page 12, lines 262-270: information more suitable to the "background" or "methods" sections

28) page 13, line 280: enrolment technique is not mentioned in the manuscript (readers are referred to reference 19)

29) page 13, lines 293-295: should be mentioned in the "methods" section, especially for the discussion of the possible overrepresentation of regular immigrants

Discussion minor comments

30) page 10, line220: the included reference does seem very appropriate. The study by Feldstein and al. does not seem to have a focus on immigrant women.

31) pages 10-11, lines 225-231: sentences needing reformulation: the comparison between the different populations mentioned (native, migrants, northern and southern) could be more clear

32) page 11, lines 232-235: are the rates mentioned also taken from reference 28?

REVIEWER	Rosa Puigpinos Riera Agencia de Salut Pública de Barcelona, Spain
REVIEW RETURNED	15-Mar-2017

| GENERAL COMMENTS | The principal difficulty of this work is the dispersion of the objective, and maybe for this reason, the methodology is a chaos.

It's impossible to know what is the sample, what is the questionnaire, who answer what ....

It seems that it exist three different samples:

- women between 25-64 years old without hysterectomy

-women between 50-69 years without previous diagnosis of breast cancer

- women of unknown age but that has a baby sometime in Italy.

My first question is: in this last group, don't exist a limit of time in the moment was the born of this baby? Because maybe I have a women 50 years old from Morocco that delivered all of her babies in Italy but longtime ago. This women, will answer the questionnaire about healthcare services during pregnancy and postpartum services?

The authors have three different questionnaires or they have one |

	questionnaire with a complicated organization in function the profile of women that we are interviewing? The 3 groups of women that composes the study, are differentiated or some women can be part in the 3 different objectives? In any case, I think that is necessary to explain which is the sample, who forms it, how many women are, how many overlap in the different sub studies. It is important too, to explain how the questionnaire is: is one questionnaire with different parts? Or were different questionnaires available that were used according to the profile of women to be interviewed? In the introduction, please, review the data about the frequency of tumors. Even though the breast cancer is the most common in women, this is not true by cervix, as the authors affirm. In other order of things, the first part of results isn't in any table, and is better if all the results are in some table or figure. Why do you present a model of logistic regression only for the Pap-smear? And in what results supported your affirmation that the years of stay in Italy is important to increase the participation in the screening in breast cancer? The same in the case of pregnancy and prenatal survey. With the results that you present in your tables we don't can see if the time in Italy for example, is important in this variable. I think that is important too, if in the tables you compare some result (visit after delivery, counseling on postpartum,…) with the same results but for the Italian women. If not, we don't know if the immigrants have a good or bad results. It would be important to know too, the age of the women that participate in this sub study, in what age has they the delivery, etc.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Methods:
1. No information is given about a pilot study. Did the authors failed to conduct it? If not, please, mention it the method section.
As suggested, since a pilot study was undertaken, we have now mentioned it in the method section (Survey instrument paragraph, page 7, line 143).
2. The third paragraph of the methods is too long. Please, make it more concise.
As suggested, the third paragraph of the methods has been shortened (Survey instrument paragraph, page 7, lines 138-142).
3. The authors failed to describe if the questionnaire has been validated.
As suggested, we have now described that the questionnaire has been validated (Survey instrument paragraph, pages 7-8, lines 143-151).
Results:
4. The authors report a lot of results regarding healthcare services utilization during pregnancy,

childbirth and the postpartum period in the result section. I suggest to delete the results that are reported in Table 3.

As suggested the results that are reported in Table 3 have been deleted.

Discussion

5. The first paragraph of the Strength and limitations of the study is too long. Please, make it more concise clarifying if linguistic and cultural mediators helped physicians with those women who could not speak Italian.

As suggested, the first paragraph of the Strength and limitations of the study has been shortened, and we have clarified the role of linguistic and cultural mediators (page 14, lines 327-335).

6. In the 2nd paragraph of the Strength and limitations of the study the authors wrote: "We found that the vast majority of participants had a regular residence permit and, consequently, health insurance coverage, and we acknowledge that irregular immigrants have been underrepresented." The sentence should be rephrased by "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."

As suggested, we have rephrased the sentence (page 15, lines 341-344).

7. I suggest, in the Conclusion section, the authors should emphasize that future research should aim to better understand the factors that predict maternal and child health services utilization and identify potential targets for intervention among immigrant women.

As suggested, we have rephrased the Conclusion section, emphasizing role of future research on predictors of maternal and child health services utilization and targets for intervention among immigrant women (pages 15-16, lines 358-363).

8. Please, check the references and be more consistent.

As suggested, references have been checked and accordingly corrected.

Reviewer: 2

Abstract

1) page 2, lines 28-30: it seems to me that the rationale could be more clearly presented if it followed the following structure: migration, health among women migrants, screening and perinatal practices among migrant women. Please refer also to comment n°4.

As suggested, the structure of the rationale has been modified following the proposed pathway (page 2, lines 28-30).

2) page 2, lines 35-40: I believe that enrolment through NGO should be mentioned

As suggested, enrolment through NGO has been mentioned (page 2, lines 40-41).

3) page 2, lines 44-45: I believe it is "among women eligible for breast cancer screening" (n=125) and not "among women with mammogram" (n=64).

As suggested, we have corrected this sentence (page 2, lines 43-47).

Background major comments

4) page 5, lines75-78: it seems more suitable to the construction of the rationale to place the sentence on the population of migrants (lines 77-78) before the sentence on cancer screening and maternal health (lines 75-76). Also, it does not seem necessary to have a distinct paragraph for lines 75-78. The rationale could be : §1 on migration and women's health among migrants; §2 on cancer screening; §3 on pregnancy and childbirth

As suggested, the structure of the rationale has been modified following the proposed pathway (page 5, lines 77-84).

5) page 5, lines 87-91: the authors should be more precise about the "improvements" or the "worse maternal health" mentioned and should include a reference, as they do in the paragraph on cancer screening ("advanced-stage diagnosis" or "mortality" mentioned in line 85).

As suggested, we have now clarified more in detail what we meant by "improvements" or the "worse maternal health" and have included references (page 6, lines 103-112).

Background minor comments

6) page 5, line 81: typo "(…) noted among immigrants" (?)

As suggested, typos have been corrected (page 6, line 96).

7) page 5, lines 89-91: sentence unclear, to be reformulated. For example : "studies on the determinants of maternal health care delivery suggest that social, economic,…factors explain the worse health among migrants, when compared with…"

As suggested, we have reformulated the sentence to make it clearer (page 6, lines 106-110).

Methods major comments

8) The authors should consider a more clear structure for the method section, including for example a "study population" paragraph (lines 119-122, 102-106), an "outcomes" paragraph (122-142) or "covariates" paragraph (lines 115-118) alongside the "survey instrument" paragraph (lines 97-101, 107-114)

As suggested, the structure of the methods section has been modified including headers for the paragraphs (pages 6-8, lines 119-174).

9) page 6, lines 102-106: the rationale for the selection of the study population (appears in page 7, lines 119-122) should be presented before the definition of the inclusion criteria.

As suggested, the rationale for the selection of the study population has been presented before the definition of the inclusion criteria (page 7, lines 124-128).

10) page 8, line 151: Does "potentially associated" designate the initial set of variables tested in bivariate analysis or the final variables included?

In response to the point on the meaning of "potentially associated" we refer to the variables that were included (tested) in both the bivariate and multivariate analysis. The several steps of the model building strategy have now been described in the methods section (pages 9-10, lines 188-207).

Methods minor comments

11) page 6, lines 97-100: the term "survey" should be mentioned earlier (in study's objectives ?) or should be presented more precisely in a short sentence. I understand this survey "has been presented elsewhere (lines 101-102)", but at the end of the background section, the readers do not know what the type of the presented study is.

As suggested, the term "survey" has been included in the aims of the study (page 6, line 113 and Title).

12) page 8, line 149: "explanatory variables" and "outcomes" have not been clearly defined in the previous paragraphs.

As suggested, the paragraphs have been modified and definitions have been clearly included (pages 9 and 10, lines 189-207).

13) page 8, lines 150-155: reformulation needed. For the model specification strategy, the authors should more clearly distinguish the methodology for variable coding (lines 153-155: continuous, ordinal, categorical, dummy coding) from the methodology for variable selection (lines 166-168: stepwise).

As suggested, the paragraph has been modified distinguishing variable coding from model building strategy (pages 9 and 10, lines 189-207).

Results major comments

14) Sample sizes and population selection process should be more clearly stated throughout the results section. It would facilitate the reader if both number of observations and percentages were mentioned throughout the results section. For example, it is not clear what is the overall population considered in page 10, line 210: "207 women, representing 96.7%" (of ?)

As suggested, reference to the different eligible populations, and samples with relative number of observations and frequencies have been included (page 10, lines 220-226 and page 12, line 262).

15) page 9, lines 185-187: there seems to be a confusion in the text about the denominator of this ratio: 0.208 = 25/125, but 125 is the number of eligible women and not "those who had a mammogram" (n=64) among eligible women

As suggested, we have now included in the denominator only women who reported to have had a mammogram for screening purposes (page 11, lines 230-232).

16) page 9, lines 187-189: results are not clear (the reference group is not mentioned here) and there also seems to be a confusion: the Odds Ratio for Asian women indicates a lower probability of screening participation than European women.

As suggested, we have now modified the results and the correct interpretation of the odds ratio for Asian women has been included. Moreover, the reference group has been mentioned (page 11, lines 232-238).

17) Table 1, variables: the authors should mention in the text if the "Yes, I had problems" observations were included or excluded from the outcome variable in the multivariate model. You seem to have included these observations (n=125 for both variables). It could be another option to exclude mammograms for symptoms from the population assessed for screening participation.

In response to this point, we have now clarified that women who had a pap-smear not for screening purposes, but because they had a problem, were included in the "no" option of the outcome variable of the model investigating cervical cancer screening. Moreover, for breast cancer screening we have now excluded, from the assessment of time since last mammogram, women who had had a mammogram because of a problem (Table 1).

18) Table 2, title: "several variables" is not informative about the selection process: it does not seem to be only the significant variables since the "employment status" is not significantly associated with screening uptake.

In response to the point on the variables that were retained in the model, as reported in Table 2, we have clarified in the methods section which was our model building strategy through stepwise logistic regression. Indeed, only variables with a p-value > 0.4 were removed from the model, and this is the reason why "employment status" and other variables, though not significantly associated with screening uptake, have been retained in the model. To avoid misunderstanding we have modified the title of Table 2 and have mentioned in the Table all the tested explanatory variables, reporting which of them had been removed.

19) Table 2, model information: the authors should mention the selection process for the sample size: from n=418 (Table 1) to n=402 (Table 2) (probably due to missing values for the explanatory variables?)

In response to the point on varying sample size, it is indeed related to missing values. We have now clarified it in the Table 2 (line 530).

Results minor comments

20) page 9, lines 179-181: study sample size should be mentioned at the beginning of the results section

As suggested, study sample size has been mentioned at the beginning of the results section (page 10, lines 210-212).

21) page 9, lines 194-200: it should be mentioned that the results presented in these lines are not shown in Table 3

As suggested, we have now mentioned that some of the results are not shown in Table 3 (pages 12, lines 256-257).

22) Table 1, title: "cancer (…) practices among…"

We have modified the title as of your suggestion.

23) Table 1, content: the authors should add the "total sample size" in order to help the reader compare with the text

As suggested, the "total sample size" has been added.

24) Table 1, footnotes: inclusion and exclusion criteria are not always consistent with the text ("sexually active" not mentioned in the text and exclusion criteria for mammography uptake not mentioned in the table)

As suggested, we have now clarified inclusion and exclusion criteria.

Discussion major comments

25) page 10, line214: "antenatal care" is not strictly correct as you also describe post-partum care.

As suggested, we have substituted "antenatal care" with "antenatal and perinatal care" (page 12, line 266).

26) page 11, lines 251-252: not supported by data. Please refer also to comment n°16

As suggested, we have corrected the interpretation of associations with women nationality (pages 13, line 307).

27) page 12, lines 262-270: information more suitable to the "background" or "methods" sections

In response to this point we agree that this information is more suitable to the "background" or "methods" sections; so we have deleted it from the Discussion and synthetized this issue in the Background section (page 6, lines 110-112).

28) page 13, line 280: enrolment technique is not mentioned in the manuscript (readers are referred to reference 19)

As suggested, we have now reported enrollment methods in the methods section (page 7, lines 124-128).

29) page 13, lines 293-295: should be mentioned in the "methods" section, especially for the discussion of the possible overrepresentation of regular immigrants

As suggested, this problem has been addressed in the methods section (pages 7, lines 125-128).

Discussion minor comments

30) page 10, line220: the included reference does seem very appropriate. The study by Feldstein and al. does not seem to have a focus on immigrant women.

As suggested, we have eliminated from the references Feldstein et al. and have included a new reference (Grandahl et al., reference n. 31) (page 12, line 272).

31) pages 10-11, lines 225-231: sentences needing reformulation: the comparison between the different populations mentioned (native, migrants, northern and southern) could be more clear

As suggested, these sentences have been reformulated (pages 12 and 13, lines 277-285 and lines 288-290).

32) page 11, lines 232-235: are the rates mentioned also taken from reference 28?

In response to this point we have now cited the correct references (References n. 35 and 36, page 13, line 288).

Reviewer: 3

It seems that it exist three different samples:

- women between 25-64 years old without hysterectomy

-women between 50-69 years without previous diagnosis of breast cancer

- women of unknown age but that has a baby sometime in Italy.

My first question is: in this last group, don't exist a limit of time in the moment was the born of this baby? Because maybe I have a women 50 years old from Morocco that delivered all of her babies in Italy but longtime ago. This women, will answer the questionnaire about healthcare services during pregnancy and postpartum services?

In response to the point on different samples, eligibility for the different groups was ascertained by the interviewers according to the eligibility criteria for participation to cervical cancer screening, breast cancer screening and having had a pregnancy in Italy.

Therefore, the same woman could be eligible for one or more of the samples. We have now clarified this point in the results section (page 10, lines 220-226). Moreover, we agree that there can be women who had had a pregnancy in Italy some years ago, however, since mean age of women in this subgroup is 34.9 years, we believe that mean time from pregnancy is not very long. Anyway, we have now taken this issue into account as a limitation of the study (page 15, lines 352-356).

The authors have three different questionnaires or they have one questionnaire with a complicated organization in function the profile of women that we are interviewing?

The 3 groups of women that composes the study, are differentiated or some women can be part in the 3 different objectives?

In any case, I think that is necessary to explain which is the sample, who forms it, how many women are, how many overlap in the different sub studies.

It is important too, to explain how the questionnaire is: is one questionnaire with different parts? Or were different questionnaires available that were used according to the profile of women to be interviewed?

In response to these questions, there was indeed only one questionnaire and the instructions given to the interviewer indicated which questions were to be formulated according to the eligibility of each single woman, and each woman could be eligible for one or more objectives. Therefore, there may be

overlaps among subgroups, although sub-analysis on each outcome of interest was done considering as denominators only the eligible women for that outcome. To avoid misunderstanding, we have now included the questionnaire as supplemental material, and have clearly identified the number of eligible women for each outcome of interest in the results section (page 10, lines 220-226).

In the introduction, please, review the data about the frequency of tumors. Even though the breast cancer is the most common in women, this is not true by cervix, as the authors affirm.

As suggested, we have better clarified differences of rates between breast and cervical cancer (pages 5, lines 88-94).

In other order of things, the first part of results isn't in any table, and is better if all the results are in some table or figure.

In response to this point since, as of your suggestion we have now better clarified characteristics of the three subgroups of eligible women, we have deleted characteristics of the whole sample.

Why do you present a model of logistic regression only for the Pap-smear? And in what results supported your affirmation that the years of stay in Italy is important to increase the participation in the screening in breast cancer? The same in the case of pregnancy and prenatal survey. With the results that you present in your tables we don't can see if the time in Italy for example, is important in this variable.

In response to the point on our choice to model only Pap smear participation, it was forced by the dimension of the eligible population that was large enough to build a model only for pap smear, whereas it was limited to 125 women for breast cancer screening and to 123 for prenatal and perinatal care. As a consequence, our discussion on role of years of stay in Italy as an important factor for the participation in cancer screening programs has been limited to cervical cancer, and no mention to breast cancer was made (page 13, lines 295-296).

I think that is important too, if in the tables you compare some result (visit after delivery, counseling on postpartum,…) with the same results but for the Italian women. If not, we don't know if the immigrants have a good or bad results. It would be important to know too, the age of the women that participate in this sub study, in what age has they the delivery, etc.

As suggested, we have included in the Table the available information on migrant and Italian women (Table 3).

VERSION 2 – REVIEW

REVIEWER	Italo F. Angelillo Department of Experimental Medicine, University of Campania "Luigi Vanvitelli", Naples, Italy
REVIEW RETURNED	12-May-2017

GENERAL COMMENTS	All suggestions made have been taken into account.

REVIEWER	Panayotis Constantinou French National Institute of Health and Medical Research (INSERM)
REVIEW RETURNED	08-May-2017

GENERAL COMMENTS	The authors have made substantial efforts to improve the structure and the clarity of the manuscript and this revised version exposes more appropriately their important work. I still have some major comments however, regarding mostly the results sections : 1) I believe, in accordance with the initial version, that the main result is the recommended cancer screening participation among

studied women, as reflected by the ratio (nb of women with recommended CS / nb of eligible women), i.e. 135/419=0.328 for cervical cancer and 26/125=0.208 for breast cancer. These are the results to be compared to the national (77% and 71%) or regional (58.3% and 49.7%) participation rates and to be mentioned in the abstract. My comment (comment N°15) underlined the inconsistency between the text and the corresponding ratio in the initial version, but I did not suggest to change the interpretation of the main result. I sincerely apologize if my formulation was not clear or misleading.

2) A limitation of your model-building strategy (stepwise selection of variables with dummy coding for some variables) is that the final model can include one class of a certain variable (nationality=asian or employment=housekeeper) and exclude another class of the same variable (nationality=afrincan or employment=sedentary). It becomes consequently unclear how many observations were read in your final logistic model to compute the estimates. You should ask advice from a statistician or consider entering the variables in the model as categorical variables to have an estimate for every class, with "european" (or "unemployed") as reference.

3) You perform multivariate regression analyses only for cervical cancer screening participation because of limited sample size for the other two sub-groups, as you clearly explain in your response. However, in order to gain some insight about the determinants of CS participation among your studied population, which is one of your main objectives, it would be useful to have descriptive statistics with the cervical and breast CS participation rates according to the explanatory variables considered (maybe as supplementary material?).

The following are minor comments :

4) Abstract, page 2, line 37: you should mention exclusion criteria also for breast cancer screening eligibility (no history of breast cancer) as you did in the initial version.

5) Abstract, page 2, line 40: "antenatal care" is incomplete formulation. Add "post-partum" or replace by "perinatal".

6) Background, page 5, lines 87-93: distinguishing breast and cervical cancer epidemiology was among the reviewers' suggestions and is indeed a useful precision. The distinction between "western countries" and "less developed countries" is also important, but I find that the message delivered in this sentence is not very clear: how does the information about "breast cancer incidence rate (…) higher in more developed countries" integrate into the introduction's rationale? I believe the important information is that although cervical cancer burden has decreased in western countries, in great part due to screening practices, it is still the third cancer-related cause of death in less developed countries and an important healthcare issue among migrant women.

7) Results, page 11, line 234 "compared with European female immigrants with longer duration of residence in Italy": you cannot interpret jointly two estimates in your model. South american women can be compared to european women (all other variables held constant, i.e. for the same length of stay) and longer stay compared with shorter duration (for the same nationality).

	8) Discussion. The factors significantly associated with lower CS participation seem to be length of stay in Italy and nationality and you interestingly discuss the cultural barriers to screening practices. You also mention the existence of a nationwide screening program. Could length of stay also reflect probability of being integrated into the screening program and of receiving personal invitations ? Also, could length of stay also partly explain differences by nationality, if asian women were more recent migrants for example ?

VERSION 2 – AUTHOR RESPONSE

Reviewer: 2

The authors have made substantial efforts to improve the structure and the clarity of the manuscript and this revised version exposes more appropriately their important work. I still have some major comments however, regarding mostly the results sections:

1) I believe, in accordance with the initial version, that the main result is the recommended cancer screening participation among studied women, as reflected by the ratio (nb of women with recommended CS / nb of eligible women), i.e. 135/419=0.328 for cervical cancer and 26/125=0.208 for breast cancer. These are the results to be compared to the national (77% and 71%) or regional (58.3% and 49.7%) participation rates and to be mentioned in the abstract. My comment (comment N°15) underlined the inconsistency between the text and the corresponding ratio in the initial version, but I did not suggest to change the interpretation of the main result. I sincerely apologize if my formulation was not clear or misleading.

As suggested, we have now used, as main results, the frequencies of women with recommended CS on the total of eligible women, which have been compared to the national and regional participation rates (abstract: page 2, lines 43-47, results: page 11, lines 245-247 and discussion: page 12, line 282-284). Sorry for the misunderstanding!

2) A limitation of your model-building strategy (stepwise selection of variables with dummy coding for some variables) is that the final model can include one class of a certain variable (nationality=asian or employment=housekeeper) and exclude another class of the same variable (nationality=african or employment=sedentary). It becomes consequently unclear how many observations were read in your final logistic model to compute the estimates. You should ask advice from a statistician or consider entering the variables in the model as categorical variables to have an estimate for every class, with "european" (or "unemployed") as reference.

In response to this point, we have now preferred to avoid stepwise logistic regression and therefore we used logistic regression, and all categories of the variables are now included in the model (Table 3).

3) You perform multivariate regression analyses only for cervical cancer screening participation because of limited sample size for the other two sub-groups, as you clearly explain in your response. However, in order to gain some insight about the determinants of CS participation among your studied population, which is one of your main objectives, it would be useful to have descriptive statistics with the cervical and breast CS participation rates according to the explanatory variables considered (maybe as supplementary material?).

As suggested, we have provided a Table (Table 1) reporting descriptive statistics of cervical and breast CS according to the considered explanatory variables (results: page 11, lines 248-253).

The following are minor comments:

4) Abstract, page 2, line 37: you should mention exclusion criteria also for breast cancer screening eligibility (no history of breast cancer) as you did in the initial version.

As suggested, we have mentioned exclusion criteria also for breast cancer screening eligibility (no history of breast cancer) (abstract: page 2, lines 37-38).

5) Abstract, page 2, line 40: "antenatal care" is incomplete formulation. Add "post-partum" or replace

by "perinatal".

As suggested, we have added "post-partum" (abstract: page 2, line 40).

6) Background, page 5, lines 87-93: distinguishing breast and cervical cancer epidemiology was among the reviewers' suggestions and is indeed a useful precision. The distinction between "western countries" and "less developed countries" is also important, but I find that the message delivered in this sentence is not very clear: how does the information about "breast cancer incidence rate (…) higher in more developed countries" integrate into the introduction's rationale? I believe the important information is that although cervical cancer burden has decreased in western countries, in great part due to screening practices, it is still the third cancer-related cause of death in less developed countries and an important healthcare issue among migrant women.

In response to this point, we agree that the important information is that cervical cancer is a relevant healthcare issue among migrant women, and we have underlined this point in the introduction (page 5, lines 92-94 and page 6, lines 95-96). Moreover, we have now eliminated that "breast cancer incidence rate (…) higher in more developed countries", and have added information on role of ethnicity on risk of breast cancer (page 5, lines 88-91).

7) Results, page 11, line 234 "compared with European female immigrants with longer duration of residence in Italy": you cannot interpret jointly two estimates in your model. South american women can be compared to european women (all other variables held constant, i.e. for the same length of stay) and longer stay compared with shorter duration (for the same nationality).

As suggested, we have rephrased the sentence to clarify that we are evaluating the independent contribution of each variable (nationality and length of stay in Italy) (page 11, lines 234-239).

8) Discussion. The factors significantly associated with lower CS participation seem to be length of stay in Italy and nationality and you interestingly discuss the cultural barriers to screening practices. You also mention the existence of a nationwide screening program. Could length of stay also reflect probability of being integrated into the screening program and of receiving personal invitations? Also, could length of stay also partly explain differences by nationality, if Asian women were more recent migrants for example?

In response to this point, we agree that length of stay may reflect probability of being integrated into the screening program and of receiving personal invitations, and we have included this interesting suggestion in the discussion (page 13, lines 303-306 and page 14 lines 310-311). As regards to nationality and length of stay, these variables were both included in the model, therefore the association of length of stay to the participation to cervical CS is adjusted for nationality and vice versa, so it seems on the basis of our results, that the role of nationality is independent of length of stay in the association to cervical CS participation.

VERSION 3 - REVIEW

REVIEWER	Panayotis Constantinou French National Institute of Health and Medical Research (INSERM)
REVIEW RETURNED	10-Jul-2017

| GENERAL COMMENTS | The authors have satisfactorily taken into account all the comments and suggestions and I believe this revised version to be suitable for publication.

There are still some minor drafting/editorial corrections to be made in the Tables :

- Table 1 : the table combines information about the distribution of characteristics among the entire study population (first column, |

	n=464) and among eligible women having undergone screening (second and third columns, n=164 and 57 respectively). You should adapt the title and sample sizes to reflect this. - Table 2 : you forgot to mention the exclusion criteria for breast cancer screening in the footnote. - Table 3 : you should mention the reference category for all the included variables (for example in brackets) Finally, some typos or minor corrections : -lines 195-198 : you still mention the stepwise variable selection in the manuscript but probably did not keep this model-building strategy as mentioned in your response letter - line 172 : typo "echographies"; - participation rate differs between the results section (line 214, 94.3%) and the discussion section and the strengths and limitations box (92.3%) - for recommended breast CS, you mention "less than half" in the discussion section (line 219) and "less than a quarter" in the abstract I would like to thank the authors for their work and the BMJ Open editorial team for the oppotunity to revise this article.

VERSION 3 – AUTHOR RESPONSE

Reviewer: 2
Table 1 : the table combines information about the distribution of characteristics among the entire study population (first column, n=464) and among eligible women having undergone screening (second and third columns, n=164 and 57 respectively). You should adapt the title and sample sizes to reflect this.
As suggested, we have provided in Table 1 additional columns reporting descriptive statistics of the eligible women for cervical (no. 419) and breast (no. 125) cancer screening according to the considered explanatory variables. Moreover, we have adapted the table title. (Table 1).
Table 2 : you forgot to mention the exclusion criteria for breast cancer screening in the footnote.
As suggested, we have mentioned exclusion criteria for breast cancer screening eligibility in Table 2.
Table 3: you should mention the reference category for all the included variables (for example in brackets)
As suggested, we have mentioned the reference category for all the included variables in Table 3.

Finally, all minor corrections have been made:

-lines 195-198: you still mention the stepwise variable selection in the manuscript but probably did not keep this model-building strategy as mentioned in your response letter.
As suggested, we have deleted "stepwise" and we have mentioned "multiple" (page 9, line 194).
- line 172 : typo "echographies";
As suggested, we have corrected the typo (page 8, line 171).
- participation rate differs between the results section (line 214, 94.3%) and the discussion section and the strengths and limitations box (92.3%)
As suggested, we have corrected the participation rate in the discussion section (page 15, line 338).

- for recommended breast CS, you mention "less than half" in the discussion section (line 219) and "less than a quarter" in the abstract

As suggested, we have corrected the mistake in the discussion section (page 13, line 295).