Author's response to reviews

Title: Community-based intervention to promote breast cancer awareness and screening: The Korean experience

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Author's response to reviews: see over
Dear Editor,

Thank you for the comments for our manuscript. It is our pleasure to submit a new version of our paper integrating reviewers’ critics. We carefully considered every point raised by the reviewers. Below are comments made by reviewers and replies by authors. The modifications we made to the manuscript were indicated in bold font.

Thank you very much for your interest and comments regarding our study.

For the Editorial request

We addressed the questions referees pointed out in more detail. We used bold letters when we address matters what Dr. Shipley stressed.

According to the editorial request, we moved some part of the method section into the introduction section.

However, while we used various theoretical frameworks for different but proper purposes, the number of the intervention arm can be regarded as one, because we used multi-component intervention as one package in the intervention city. Therefore, we think it would be better not to address this point.

For the comments of Reviewer 1

<Comment 1>
Data on page 9 77.1- 91.3% plus 82.9% -90% it is unclear from the tables where these figures come from?

<Answer>
Thank you for your comment.
When you see the table 4, the proportions for contemplation (40.0%) and action (37.1%), when added together, result in 77.1% on the baseline in the intervention city. In the same way, the proportions for contemplation (30.8%) and action (60.5%) result in 91.3% on the follow-up in the intervention city.

<Comment 2>
Qualitative data are mentioned in the methods but there is no mention of the data or how interviews added to the outcomes of the study with no data on patients stories and how these developed?
The 15 education sessions are not discussed in any detail. Maybe this study represents only the quantitative data and if this is the case it has to be explained in the methods.

<Answer>
Thank you for your excellent comment.
As we mentioned in the manuscript, we have conducted eleven focus group interviews for this study.
The results of both qualitative and quantitative research were used to develop educational materials for
small group education sessions. Since this study represents only the quantitative data, we did not report the findings of qualitative research. We are preparing another manuscript for the findings of qualitative researches. We newly set up the section ‘interviews’ to describe interviews conducted for this project (page 6).

As you mentioned, the education sessions are not discussed in detail. The education session consists of following parts; OX quizzes to break the myths related to breast cancer and screening mammography, personified story to raise breast cancer awareness, statistics on breast cancer, symptoms of breast cancer, animation that shows how a mammogram is performed, and discussion on fear related to cancer screening. The education evaluation conducted in the pilot test of 37 sampled residents showed that these education sessions improved the participants’ knowledge level about both breast cancer and breast cancer screening. The knowledge score increased from 9.95 to 11.62 (p<0.001). The education evaluation conducted in the pilot test of sampled residents showed that these education sessions improved the participants’ knowledge level about both breast cancer and breast cancer screening. However, the limited number of education sessions might be insufficient to generate the critical mass necessary to impact the whole community. We revised our manuscript according to your comment (pp12-13).

<Comment 3>
The implications for practice could be strengthened.

<Answer>
We added some additional comment in the conclusions (p14).

For the comments of Reviewer 2

<Comment 1>
It will be helpful if authors can provide the current recommendation/guidelines for breast cancer screening in Korea; for example, the age starting to get mammograms, the frequency, etc. One of outcome measure is the intention to obtain a mammogram in the coming 2 years and mammogram use in previous 2 years, however, depending on the current policy in cancer control for breast cancer in Korean will justify if this item is culturally appropriate.

<Answer>
Thank you for your excellent comments.
We added the current recommendation for breast cancer screening in the background (p4).

<Comment 2>
The author(s) stated three different theoretical frameworks/models were used; however, it lacks the clarity of how they were incorporated. For example, it was stated that “according to the model, we conducted social, epidemiological, behavioral, environment, ecological, administrative, and policy assessment,” specifically, what variables were measured and how the results helped to build on current study. It’s also now clear how HBM and Social Marketing guided the current study. On pg. 5, please clarify what you meant by “we regarded place and promotion as main problems…” The stages of change is one of study variable, however, the Transtheoretical Model was not listed as one of theoretical frameworks used in the study.

<Answer>
- The three theoretical frameworks were used for different purposes. The PRECEDE/PROCEED model was used for planning the intervention as a whole, considering different perspectives of the community. The health belief model and the transtheoretical model were used to develop a questionnaire for quantitative survey through conducting the qualitative research, in which factors in the HBM constructs were explored according to the TTM stages.
- We chose the social marketing strategy approach to promoting health behavior. We did not merely try to inform people or persuade them to change their behavior, but attempted to sell our services as products. We analyzed the target population using segmentation by age and TMM stage of change, and developed intervention activities according to results of the analysis. Because breast screening with the NCSP is free for Korean women aged 40 years and over and because community health education is also free, we regarded “place” and “promotion” as the main elements of the marketing mix (Product, Price, Place, and Promotion) needing to be addressed. Therefore, we adopted an outreach education program and direct mailing as campaign activities.
- We revised our manuscript according to your comment (pp5-6).

<Comment 3>
Some statements may need to be revised and more specificity, for example, on pg. 6, “the screening for breast cancer was neither too high nor too low…” What does this exactly mean?

<Answer>
Thank you for your excellent comment. We corrected the manuscript according to your comment (p6).

<Comment 4>
Despite the intent was to have two groups (intervention vs. comparison), the data reported on Table 2 showed that the comparison group also received components of intervention (e.g., poster, leaflets, direct mail, street promotion and website info. and outbound call). Can authors provide more information about this?

<Answer>
Thank you for your excellent comment. As we mentioned about the possible presence of concurrent communication activities by other projects in the control city (p11), the reason for exposure of intervention in comparison city could be the presence of a concurrent national message or other local messages that has existed in the comparison city. We added more explanation on this issue according to your comment (p11).
Reviewing Table 3, there were some interesting observations on baseline. The comparison group demonstrated higher accuracy on four out of 6 myths question and also intention compared to intervention group. However, the authors did not perform any statistical analyses to see if the differences are significant and the comparison between pre- and post-campaign within intervention and comparison city did not account for the baseline differences. Therefore, it may be appropriate in the revision to consider these deficits.

Thank you for your excellent comment. Since two-city community intervention trial was not a randomized controlled trial, there can be some level of baseline differences in characteristics of residents in each community. Therefore, the important thing was not the baseline but the change between the time periods, and we did not perform the analyses for the baseline difference. We think that table 3 showing the differential effect of the intervention using odds ratios of the TIME by CITY interaction term could be a good option.

It was alluded late in discussion that the part of the intervention included the sessions of group education in all apartment complexes (pg. 11), however, the outcome for this component was not measured or reported.

We conducted fifteen sessions of group education in nearly all apartment complexes in the intervention city during 6 months. The education session was found to significantly improve the knowledge level of the participants in the education evaluation conducted in the pilot test among sampled residents before education session was launched. However, since we did not evaluate the education intervention in every session, we did not report the data. We corrected the manuscript in the discussion (p12).

On pg. 9, more details are needed on the significant interaction results on three myths.

While no beneficial change was observed in the comparison for these 3 myths, the intervention city showed a significantly decreased, and therefore improved, level of belief of those myths. According to your comment, we revised the manuscript (p10).

On pg. 10 when author(s) described specific intervention component were associated with the myths; however, it’s not clear to know what analyses were performed and how they determine such effects. More clarifications will be helpful. The authors need to provide more information about the results on logistic regression models.

We described analyses what we used in the analysis section. Possible secular trends and the influence of non-campaign activities were statistically controlled by fitting the multivariate logistic models with the following: characteristics of the subjects; CITY, TIME, CITY by TIME interaction; all of the intervention activities listed in Table 2; other possible non-campaign activities; and all of the 2- and 3-way interactions of these variables with CITY, TIME, and CITY by TIME. When a certain campaign
activity in the intervention city has a statistically significant interaction with CITY by TIME, we understand that the activity is associated with the campaign of the intervention city.

According to your adequate comment, we revised the manuscript in the results section (p10).

<Comment 10>
On pg. 11, the authors explained the increase on myths in the comparison city may be due to a secular trend; however, the same reason can also contribute to the increase in the intervention city. The fact is that the participants in the comparison city also reported they receive the intervention components (in Table 2), so is it possible that these intervention components can contribute to the increase in the comparison city?

<Answer>
Thank you for your excellent comment. As we explained for your comment 4, the increase in the comparison city could be also due to concurrent national message or some non-campaign communication in the control community. We added more explanation in the discussion (p11).

<Comment 11>
On pg. 12, the authors discussed the variables were statistically controlled when effects of each campaign activity were analyzed, however, it’s not clear on which part of the analyses and how. Please provide more detailed information.

<Answer>
Thank you for your considerate comment. The sociodemographical variables were statistically controlled by multivariate logistic regression including CITY, TIME, and CITY by TIME interaction in order to see whether the campaign activities in the intervention city influenced the city independently when we analyzed the effect of each campaign activity. Therefore, any statistically significant campaign activities can be regarded as independent of other variables, including sociodemographic variables. We added more explanation in the discussion (p13).