Author’s response to reviews

Title: Predictors of regular mammography use among American Indian women in Oklahoma: a cross-sectional study

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Version: 4 Date: 30 May 2014

Author’s response to reviews: see over
Response regarding reviewers’ comments
By
Eleni L. Tolma
5.29.14

Please see below our response to the reviewers’ comment as shown in italic form.

Reviewer's report
Title: Predictors of regular mammography use among American Indian women in Oklahoma: a cross-sectional study
Version: 2 Date: 30 January 2014
Reviewer: Sharon Laing

Reviewer's report:
BioMed Central – Women’s Health
Mammography Screening Article
The study aims to assess psychological, social and environmental factors predicting mammography utilization among a sample of non-reservation dwelling AI women in order to promote regular screening among this group.
The strengths of the study are as follows:
1. The topic is indeed an area requiring exploration. The authors note that in Oklahoma, AI women make up 11% of the total population but are significantly more affected by breast cancer incidence and late stage BC relative to non-Hispanic Whites.

2. The authors explore known psychological factors that have historically served as barriers to accessing healthcare among minority women including fatalism and cultural mistrust – these factors are also identified as components of a comprehensive behavioral model -- Theory of Planned Behavior. The author also identified physician recommendation as a traditionally motivating factor for engagement in preventive care and attempted to assess this factor for this subgroup of women.

3. The authors did find that the odds of reporting engagement in recent screening are lower for women having higher cultural affiliation and perceived fatalism. Indeed this result deserves additional exploration.

The major weaknesses of the study are as follows:

1. The findings from the study do not provide new information about motivators for breast cancer screening—access to care remains the primary motivator to engagement and this is especially true for minority women. The data in this initiative support this as:
   • 93% of women with a primary physician reported having a mammogram within the past 2 years
   • 90% of women who visited a primary physician within the last year reported having a mammogram
   • 64% of women with private health insurance had a mammogram within the past 2 years
- 56% of employed women had a mammogram within the past 2 years
So, it would appear that no new information is obtained by the study

Authors’ response
We appreciate the reviewer’s comments and we would like to clarify the interpretation of the data. The reported percentage values in Table 3 are column percentages that should be interpreted within each mammography screening stratum. The correct interpretation is:

- 93% of women who had a mammogram within the last 2 years had a primary physician compared to 85% among those who did not have a mammogram within the last 2 years (p=0.028).
- 90% of women who had a mammogram within the last 2 years visited a primary physician in the last year compared to 85% among those who did not have a mammogram within the last 2 years (p=0.20).
- 64% of women who had a mammogram within the last 2 years have private health insurance compared to 50% among those who did not have a mammogram within the last 2 years (p=0.027).
- 56% of women who had a mammogram within the last 2 years are employed compared to 34% among those who did not have a mammogram within the last 2 years (p=0.0002, overall test comparing distribution of full-time, part-time, and unemployed).

The focus of this study is not on intervening on demographic differences since we know from a health promotion perspective that we cannot change within a 3 or a 5-year program the demographic picture of our priority population, and that is why the focus of this study is on modifiable factors including internal/psychological factors as well as environmental factors such as policy changes within the clinic. The fact that the majority of the women had a primary physician is not surprising since this study took place at a tribal clinic that provides free access to preventive health care to its members as well as members from other tribes. In addition, a lot of participants in this study based on discussions with the medical director, have diabetes, and the clinic has a comprehensive program for its diabetes patients, during which they visit the physician or a medical provider on a monthly basis, however, breast health education is not always part of the patient-health provider discussion during these visits. If there is one notable finding (table #3), is that only 66% of the women who had a mammogram within the last 2 years had a physician breast exam compared to 31% among those who did not have a mammogram within the last 2 years (p<0.0001). This factor seemed to be very important as shown by the results of the multivariate analysis (Table 4) where women were almost six times more likely to report past mammogram if they had an annual physician breast examination.

2. Although women who are likely to screen have a primary physician, a very large proportion of women who do not screen also have a primary care physician
- 85% of women not screening have a primary care physician
- 85% of women not screening visit their primary care physician at least once every year
The above was surprising and was not addressed by the authors in the discussion and requires some interpretation.

Response:
We appreciate the reviewer’s comment. Indeed the literature on promoting mammography screening among minority populations does indicate that minority women who have a primary
care physician are more likely to get a screening mammogram. However, most of the studies in this area, have been conducted with minority populations other than Native Americans. This is the first study to the best of our knowledge that examined this relationship in the Native American culture. Native Americans in the US can receive health care via three ways: a) Through the Indian Health Services b) Through a tribal clinic and c) Through private health insurance (i.e. via their employer.) In our study, the tribal clinic that we work with, provides overall very good health care services to its members (and hence the high % of participants with a primary healthcare provider), yet, only 65% of the research participants based on the results of this study had a regular screening mammogram. This is considered low compared to the current rate of mammography screening among all women in the US who are eligible for mammogram which is 73% (http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6103a1.htm) and the Healthy People 2020 goal of 82%.

And this is where the significance of this study lies. American Indian women in this particular region who receive services from the tribal clinic, despite the fact they have access to free mammograms and other preventive services, yet, do not get regular screening mammograms. We launched this research to find out the “why” and based on our results the answer is multifactorial which includes fatalistic beliefs that women might have about mammography screening, lack of knowledge, or environmental related factors. Another reason we did not comment on any results of the bivariate analysis is because the most important results of the study are found in Table #4 (through the multivariate analysis) and we did not want to make the paper too lengthy, and therefore we focused on discussing those results primarily.

3. The sample may not represent the people who the authors really sought to understand. The majority of women were well-educated (58% with post high school education), 59% of population had private health insurance and 91% had primary care physician. Do these women represent the bulk of Oklahoma AI women presenting with 34.2% of late stage cases and who may not be adhering to screening guidelines?

Response:
In Oklahoma as well as in many other states, there is diversity among Native American tribes (in terms of cultural practices and socio-demographics) and also diversity regarding the quality of health care and frequency of the services- especially in the area of prevention- their tribal members receive. The results in this study cannot be generalized to all Native American women who live in Oklahoma but only to other tribes in Oklahoma and elsewhere in the US with similar socio-economic characteristics. We are not sure how many other tribes in Oklahoma share similar characteristics with the one represented in this study. We also do not have any information regarding the % of women who are diagnosed with late stage breast cancer within our priority population, since the tribal clinic does not provide any follow-up care for women who are diagnosed with breast cancer (women are referred to other facilities in Oklahoma), so it is up to the individual woman to seek private health care or utilize the services of the Indian Health Services.

Minor weaknesses:
• Typographical errors
Response:
We thank the reviewer for identifying typographical errors. Although the reviewer did not specify where the errors are in the manuscript, we attempted to find them on our own, and we corrected them. These include omission of words, changing the order of words in a sentence, including commas (,) etc. The changes are noted with red lettering throughout the manuscript.

When assessing the work, please consider the following points:
1. Is the question posed by the authors well defined?
The question was well-defined
2. Are the methods appropriate and well described?
Methods are appropriate
3. Are the data sound?
Data are sound
4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
Adherence to relevant standards are observed
5. Are the discussion and conclusions well balanced and adequately supported by the data?
No.
a- The author speaks to the fact that findings support the importance of physicians in promoting mammography screening but did not address the fact that a substantial proportion of non-screeners also had access to a primary care physician (85%) or visited a primary care doctor within the past year (85%) – this needs to be addressed

Response:
As we said earlier, this finding is not surprising to the authors considering the context where the study is taking place, that is a tribal clinic which provides free access to health care services. Moreover, the fact that this finding did not seem to be important in predicting past behavior (as shown in Table #4) indicates to us that it does not need to be addressed. The fact that the majority of the women have a primary health care physician, does not mean that the physician discusses the topics of mammography or breast health with his/her patients on a regular basis. Women might be considering an endocrinologist or a diabetes specialist as a primary health care physician. We think the main findings of this study in relation to the physician’s role that we also emphasized in our paper is that physician recommendation (via the subjective norms beliefs) and frequency of physician breast examination are important in predicting past mammography behavior. Whether a woman had a primary health care physician or not, did not seem to be important and therefore was not included in the discussion part.

b- Authors spent too much time discussing cultural affiliation and fatalism in discussion section

I think we tried to address all findings as much in-depth as we could. There is a plethora of literature in the areas of cultural affiliation and fatalism and that is why we included those in the discussion. However, we believe we addressed the physician-related factors, lack of knowledge and factors related to the clinic setting quite extensively as well. If the editor believes we need to
cut down some of the discussion on the topics of cultural affiliation and fatalism we will be happy to do so.

6. Are limitations of the work clearly stated?
   c- Authors presented few limitations of their work. An important limitation is the fact that the sample might not represent the group about which the authors seek to understand screening behavior. The sample was fairly well educated, had access to care (including private health insurance and a physician)

   **Response:**
   As said earlier, Native American tribes in the US vary in terms of structure (reservation vs. non reservation ones, location, tribal system, access to health care etc). There are a lot of tribes who are similar to the one we worked with, and despite the fact that they provide access to health care women still do not get regular screening mammograms and die from breast cancer. Most of the studies to the best of our knowledge that were conducted with the Native American population in the area of breast cancer, have dealt with tribes that have low access to health care services or with populations who live on reservations. The fact that we worked with a tribe that might seem more “affluent” compared to what the general public view might have about Native Americans in the US, this does not undermine the importance of our study. All Native American women, regardless of their socio-economic background are at risk for developing breast cancer at some point of their lives. Moreover, the approach toward promoting mammography screening should be tailored to the characteristics of the Native American population we work with, in other words, one strategy does not apply for all Native American women, and that is why we conducted this formative research to identify the specific areas of our intervention focus.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
   d- Yes

8. Do the title and abstract accurately convey what has been found?
   e- Yes

9. Is the writing acceptable?
   f- Yes

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
None

**Reviewer's report**

**Title:** Predictors of regular mammography use among American Indian women in Oklahoma: a cross-sectional study

**Version:** 2

**Date:** 26 April 2014

**Reviewer:** Carol Strong

**Reviewer's report:**
I appreciate the authors’ effort to collect data in a hard-to-reach population. Below are some of my comments and suggestions:

MINOR ESSENTIAL REVISIONS
1. Citations for the first and second sentences.

Response:
The citations for the first and second sentences correspond to the reference by the American Cancer Society. Therefore we incorporated the citation and we changed the order of the references to correspond to the order to the citations. The changes are also shown in red lettering.

MAJOR COMPULSORY REVISIONS

2. Have you compared the results for two studies, since you combined the samples? Are they similar in most of the factors you are interested in?

A comparison of demographic and clinical characteristics of the early (n=162) and more recent cohorts (n=93) was performed and a summary of these findings has been added to the manuscript. The more recent cohort of patients was older and was more likely to have a positive family history of breast cancer compared to the earlier cohort. No other factors differed significantly between the cohorts. Based on these findings, we feel that it is still appropriate to analyze data from the pooled cohorts. A related sentence was added in the manuscript, on page 7, top paragraph.

“The more recent cohort of patients (n=93) was older (33% aged 40-49, 42% aged 50-59, and 24% aged 60-69 years) than the earlier cohort (n=162, 53% aged 40-49, 30% aged 50-59, and 17% aged 60-69 years) (Chi-square test for trend, \( p=0.0061 \)) and was more likely to have a positive family history of breast cancer compared to the earlier cohort (42% vs. 20%, Chi-square test, \( p=0.0002 \)). No other factors differed significantly between the cohorts.”

3. Need more description of the scales you borrowed from others (citation 38, 39, 40 on page 6), such as alpha and whether you used the whole scale or you revised them? Were these scales designed for AIs? Did you use a sum/average score? Anyway, much more detail is needed.

Response:
The reviewer is referring to the three scales of Strength of cultural affiliation by Dr. Mood, the scale of fatalism developed by Dr. Powe and the Breast cancer susceptibility scale developed by Champion. The first scale was developed originally to measure the strength of cultural affiliation of any minority group. The participants had to identify at the top of the instrument which cultural group they belonged to. The scale for this study was adapted to the Native American culture and rigorously pilot-tested during the development of the questionnaire back in 2005-2006. All the items were used, however, not all of them were scored based on the guidelines by Dr. Mood. The CA of the adapted scale was noted in table 1 (0.87). The scale based on its developer had a unique way of measurement. Basically we averaged over 14 items (#1-10, 12, and 14-16). Items 11 and 13 were not scored as they lead in items 12 and 14 respectively. Items 17 and 18 were new items at the time when the scale was designed and according to the author of the scale there was not much information about these two items and therefore we did not score them either. Item #19 is not scored either but is used as a measure of concurrent-construct validity. Item #20 is an
open-ended question that is used to solicit additional ideas that will help the research team to better understand the participant’s affiliation with her tribe and therefore it is not scored. During the survey administration we did not exclude any item in order to preserve the integrity of the scale, however, during the establishment of the psychometric properties of the survey only those items that were scored were included.

Regarding the scale by Dr. Powe on fatalism, Dr. Powe’s original scale is made of 15 items and it is focused on colorectal cancer screening and it has been used prior to our study by her among Caucasian and African American populations. After adapting the scale to breast cancer, and through an intense pilot-testing during the first year of the development of the questionnaire we ended up with only 5 items. The CA is noted in the table 1 (CA: 0.74). Regarding the scoring we summed the five relevant items. Each item was measured on a 5-point Likert scale.

Regarding the perceived breast susceptibility scale by Dr. Champion we used only 5 out of the 6 items of the original scale since during the factor analysis one of the items was excluded. We averaged over the five relevant items. Each item was measured on a 5-point Likert scale ("strongly disagree" to "strongly agree"). The CA of the scale 0.86 as noted in Table 1.

Because of the complexity of how to measure the Strength of Cultural Affiliation scale we believe it is unnecessary to add any additional information besides to what we already have in the text regarding the scale. Regarding the other two constructs, we added additional information to provide a better explanation regarding how those constructs were scored and measured. This can be found on page 10, highlighted with red lettering.

“The rest of the constructs (i.e. breast cancer perceived susceptibility and breast cancer fatalism) were measured with a 5-point Likert scale which ranged from “strongly disagree” to “strongly agree”. The sum of the product scores across all items served as the measure of breast cancer fatalism and breast cancer perceived susceptibility. “

4. Need much more detail on the factor analysis of the 82 items. Where did these items come from? What is “AI beliefs regarding the AI woman’s role in the current AI society?”

Response:
The majority of the items were statements derived from the qualitative research we conducted back in 2005-2006. The information about the qualitative research (i.e. elicitation interviews and focus groups) can be found in page 6 under the section “study design and participants.” Moreover, on page 8 bottom paragraph we noted that “most of the scales were developed by transforming comments derived from the elicitation interviews into item statements” with the exception of the three scales that were borrowed from other researchers. We believe that we
Regarding the second question about “AI beliefs regarding the AI woman’s role in the current AI society” during the qualitative research we found that women talked about the transitional role of Native American women as they move from a traditional to a more modern one. We wanted to explore this more in depth and that is why we created a scale of items by using responses from the qualitative research. Based on the factor analysis we ended up with two subscales and based on the commonality among the beliefs of the subscales we named the subscales American Indian beliefs regarding women’s role (leadership role) and AI beliefs regarding women’s role as traditional. These two subscales along with the Strength of Cultural affiliation aimed at examining the degree of the traditionality among NA women. At the onset of the study, the first author did a literature review and there was a scarcity of well-designed scales that measured this aspect and usually the scales comprised of 3-4 items asking the participants whether they speak their tribal language, attend tribal ceremonies etc. That is why the primary author tried to explore this aspect in more breadth and depth by using three different scales.

5. Does WHS include all the constructs you mentioned (citation 38-40, plus WHS)? Need more clarification on that.

Response:
The WHS includes all the three constructs mentioned in citations 38-40 (i.e. cultural affiliation scale, breast cancer fatalism and breast cancer susceptibility) in addition to the constructs related to the TPB (attitude, subjective norms, perceived behavioral control, intention and behavior, the constructs of self-efficacy and social modeling part of the Social Cognitive Theory, and the construct of perceived susceptibility to breast cancer (HBM). In order to make it more clear to the reader that the WHS refers to all the above constructs in addition to demographics and clinical characteristics we replaced the word “questionnaire” with “WHS” as shown on page 8 under the section “survey design” and “measures of demographics and clinical characteristics”

6. Since you emphasized the use of theories, it may be clearer if you specify which theory was used for each construct/measurement. Perhaps categorize all measurements you used under theories. It may help to clarify.

Response:

We have incorporated in table 1 the theory that each subconstruct represents to make it clearer to the reader how the three main theories (TPB, SCT, and HBM) relate to the various subconstructs. We also added a related phrase in the text “The name of each subconstruct and the theory it represents” as shown on page 9.

7. Where does the measurement of subjective norms come from? The same question for the following measures: normative beliefs, motivation to comply, etc.

Response:
The measurement of the subjective norms encompasses two subscales: the “normative beliefs” and the “motivation to comply” to the social referent. The TPB is a unique and robust
theoretical framework because it provides a standard approach as to how one can operationalize its different constructs according to the founders of the theory which I cited in the paper (references24,25). In order for a researcher to use this theory she/he has to be trained or have a deep understanding how it works, as it involves various steps starting with the elicitation interviews, identification of the salient beliefs, transforming those beliefs from comments to actual survey items, and then continue with the standard methodological steps of any survey development. The beliefs included in the normative scale and the sub-constructs were derived from the qualitative research. Because the focus of this paper is not on the actual application of the TPB from a theoretical perspective, we did not think we needed to expand on this aspect. We believe we provided sufficient related information in the background and the study design sections. We also stated that the first author is willing to share the survey with anyone interested in using it, and of course the first author is more than happy to provide assistance on how one operationalizes and measures its constructs.

8. It seems like you need to pay more attention to the measurement. I truly appreciate your effort to have tailored or newly-designed measures for this hard-to-reach population. I think it would be an important contribution if you can validate all the measures more carefully.

Response:
Thank you for your kind comments regarding the measurement. It took close to 3 years of research work to develop the survey and validate it (in terms of reliability and construct validity) as most of the studies at the time this study started back in 2005 focused primarily on survivorship issues among AI women and there were no valid and reliable instruments to use in the area of screening mammography and breast cancer among the Native American community. The measures have been proven valid and reliable but we will continue to measure the psychometric properties of the survey since an updated version of it is currently being used as an evaluation tool of an intervention that has been designed and planned based on the results shown in this manuscript.

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests: I declare that I have no competing interests.