Author's response to reviews

Title: What changes poor mothers' child care-seeking behaviors?: a cross sectional study in Granada, Nicaragua

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Author's response to reviews: see over
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Version 1: Date: 27 January 2010

Author’s response to reviews: see over
Dear BMC International Health and Human Rights Editorial office

RE: responses to the reviewer’s comments:

Original Title: What changes poor mothers’ child care-seeking behaviors? : a cross-sectional study in Granada, Nicaragua

We are very grateful to the three reviewers who have critically scrutinized the manuscript (MS) and provided us with many points to improve its quality. Except for a few comments where we have tried to give explanations we have incorporated each, and every comment of the three reviewers in the revised MS. Moreover, point-by-point responses are given below to the raised queries.

In responding to the queries we followed the following strategy:

• We addressed first the queries of referee 1, then referee 2, and finally that of referee 3
• Response to every query is given immediately following the query
• Each query is indicated by REF (to mean query of referee) and our response to that query is indicated by RESPONSE.

We hope that each and every point is now addressed to the satisfaction of the editorial board and the three reviewers, and we look forward to hearing from you soon.

On behalf of authors, Kayako Sakisaka*

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Boston, MA 02115-6021, USA. (From August 2009-)

and

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Summary of Major Revisions

We have revised the original manuscript (MS) drastically to improve its quality. We have disclosed more detailed information of this study. Major revisions are as follows;


2. We removed original Table 1 and 2, and we prepared new Table 1 and 2, including detailed information on the socio-demographics of the participants, based on the reviewer’s comments.

3. We added new Table 3 to describe participants’ perception on health service, We consider this information may explain more about the background of the participants ‘care-seeking behaviors.(Original Table 3 moved to Table 4).

4. We re-calculated some statistical analysis (see new Table 5: originally this was Table 4). For the final model, we identified one important variable, ‘visiting health post first’ instead of ‘nearest health facility was a health post’.

We are grateful if you could understand our efforts to improve the original MS.
Reviewer's comments and authors' reply

Title: What changes poor mothers' child care-seeking behaviors?: a cross sectional study in Granada, Nicaragua

Reviewer 1's report:

REF: 1 Abstract: Does not show name of the study site anywhere? Problems with English syntax. Model of analysis is not explicit.

RESPONSE:
Name of the study site:
We added the name and necessary information on study site in Abstract section.

English syntax:
We asked native English editor to revise the MS carefully to ensure sufficient readability.

Model of analysis is not explicit:
We performed first bi-variate logistic analysis. Then these possible associated factors which showed in significant level (<0.05), we formulated final multiple logistic regression model. We calculated adjusted odds ratios, 95% CI.
We consider that this statistical analysis is applicable to identify the determinants. However, our explanation in previous MS was not sufficient. We have revised the contents of abstract, results, and discussion section.

REF: 2 Background: not comprehensible because no reference list is provided in the manuscript.

RESPONSE:
We sent MS, references, Tables together to the editor when we submitted the previous MS. We wonder why editors did not send our reference list to the reviewers. We are grateful that you sent us precious comments without reference list. This time we used Endnote X3 version, hopefully you may read references at the end of the MS.

REF: 3 Is mother's education only reason for delay in health care seeking? When talking of quality of services on page..., is this the perceived quality or otherwise?

RESPONSE:
We concluded mothers’ years of school education nor experience of health education before did
not influence on changing poor mother’s second choice of care seeking behavior. In response to this comments, we added Table 3(new) to explain mother’s perception of health services provided.

We analyzed various aspects of mothers’ care seeking behaviors based on Kroeger’s framework [Kroeger, 1983. Anthropological and socio-medical healthcare research in developing countries. Social Science and Medicine 17(3),147-161.] which is the most holistic model to examine factors, determinants of health-seeking behaviors and health service utilization, particularly in developing countries.

REF: 4 Why objectives of the study mentioned in the background chapter? These are anyhow different from the ones mentioned in the abstract.

RESPONSE:
We added ‘Objectives’ section independently. We also checked the consistency of the objectives.

REF: 5 Methods: Why this site for research; what is the rationale?

RESPONSE:
We described rationale of site selection in the revised MS. There are two main reasons to select this area as the study site.

First, in terms of child nutrition aspects, Granada province can be considered as representative of the country from the proportion of both child stunting (25%), underweight (12%) indicators presented in UNICEF, States of the Worlds’ Children 2001, even in 2003. Demographic and Health Survey (DHS) 1998, which was available at the planning stage of this survey also presented the similar level.

Second, this study was conducted as a base line survey for Project for strengthening Granada Community Health supported by JICA (Japan International cooperation Agency). There were 4 municipalities in the project catchment area, however, Nandaime was selected by large population size, accessibility to households visit by the researchers, and communicability in Spanish. Since we intended to study not only health center users but also all the mothers who lived in the target communities. We accessed to vulnerable, poorest mothers, who did not read nor write.

REF: 6 methods: Target population: just one criteria for selecting mothers (1 child of 0-23 months) sounds inappropriate for such an important study.

RESPONSE:
We have revised, and added necessary information in the revised MS. Rationale of selection of the target population, sample size calculation, sampling method, inclusion and exclusion criteria.
REF: 7 Results: Illness, child mortality and distance to facility emerge as important determinants, why not pull some concrete recommendations for these factors in the conclusion?

RESPONSE:
We are grateful for the fruitful reviewer’s comments. We modified the discussion section, and recommendations to cover these issues.

REF: 8 Page 13: IMCI was already introduced... where? to whom?

RESPONSE:
IMCI is a great issue, indeed. However, we finally excluded detailed discussion on IMCI. Since at the survey in 2002, IMCI strategy was not introduced substantially in the study site.

REF: 9 Page 14: respondents mention that health personnel were not in the health posts; then why not any discussion on this factor is included in the paper.

RESPONSE:
This comment is also quite reasonable. We added some information and explanation on this point in the discussion section. We discussed limited roles of health posts in this study site, and cited successful study in Niger.

REF: 10 Conclusion: why just ARI is being mentioned as an illness for which mothers should react?

RESPONSE:
We modified MS on this point: The reasons are as follows;
1. As shown in the results section, having symptoms of respiratory disease was higher (69.3%) than any other symptoms in this study
2. ARI is the major killer for children worldwide. We intended to elaborate the implications on symptoms of respiratory disease from our findings. We have corrections, and modified discussion section.
   (Respiratory symptom does not mean the ARI, although).

REF: 11 Overall comments: what's new that this study has added to the literature/research on HSB among mothers of under 5?

RESPONSE:
1. To date, there is still no field based health seeking behaviors (HSB) reporting articles from Nicaragua.
2. There are many articles on mothers HSB in developing countries, though few articles tackled on how mothers choose the second choice.
3. We challenged to ask the mothers about past child death experience, that are commonly prohibited to ask for poor mothers. As a result, we found the child death experience was strongly associated with behavioral change. Therefore, we recommended to provide more information on child health danger signs targeting for poor mothers. This message may
unique than the existing studies.

4. The number of child death experience was about three times higher than the official data. We could disclose the gap between official data and field based reality in this study area.

REF: 12 What could be the policy messages out of this study?
RESPONSE:
We are grateful for this comment. Our previous MS did not cover this point much. We added the following points in the discussion section.

1. We added policy recommendations to establish realistic national referral system.

2. As we identified in this study, the poor bear higher medical cost proportion against the household income. We suggested that policy maker should address to reduce the medical cost, and establish more social safety net for the poor.

REF: 13 Any limitations of this study?
RESPONSE:
We modified limitations. Main modified limitations are as follows:

1. Study design: since our study was a cross sectional study, we could not identify the causal relationship between possible affecting factors and target mothers’ behavioral change. Thus, we could not logically explain on scientific behavioral change, like in the longitudinal study.

2. We selected eligible samples using systematic random sampling, and targeted average province referring child nutritional status from the national data. However, Granada province is geographically close to the capital city. Therefore, we have limitations to generalize our findings to the whole country.

3. To measure anthropometric precisely, we assigned medical staff from the Granada provincial office. Some mothers possibly may reply favorable answer for them.

4. The data is old enough (studied in 2002). (However, to our knowledge, there is no study on mothers’ care-seeking behavior from Nicaragua).
**REF: 14** Can the results from this study in one region of Nicaragua alone be extrapolated for the entire country?

**RESPONSE:**
As mentioned *(see above REF 13)*, we targeted average area using existing national child nutritional status data (UNICEF, States of the World’s Children, 2001). Granada province is rather close province to the capital city. Therefore, we have some limitations to generalize our findings to the whole country.

**REF: 15** Authors do not suggest what more they'd like to do in the same thematic area of research...way forward?

**RESPONSE:**
We agreed to Reviewers’ comment. We added necessary information on this point. Please find the recommendations section in the modified MS.

**REF: 16** Where are the references (by the way)?

**RESPONSE:**
Actually we sent the references to the editor when we submitted the original MS. Now we revised references list as well, hope that this time you could read/confirm our reference list without any problem.
Reviewer 2’s report

Version: 2 Date: 5 November 2009

Reviewer: Dr. Jasim Uddin

REF: 1 Is the question posed by the authors well defined? Ans. Yes, the questions proposed by the authors are well defined.

RESPONSE: Thank you Dr. Jasim Uddin. We have revised it, and added some information in Background section.

REF: 2 Are the methods appropriate and well described? Ans. The methods section has to be revised (please see my comments)

RESPONSE: We have modified method section. Please find attached modified MS.

REF: 3 The authors used old data set (data were collected in 2002). Suggested to supplement by recent data if possible.

RESPONSE: We agree that our data set was old enough, however, up to now there is no official or any published data on this issue from Nicaragua. So we decided to submit this study evidence.

To have more precise observation and interpretation of the data, we also included recent references, supplemental data to support data set. In addition, we confirmed recent socio demographics of the target area.

REF: 4 Does the manuscript adhere to the relevant standards for reporting and data deposition? Ans. The manuscript adheres to the relevant standards.

REF: 5 Are the discussion and conclusions well balanced and adequately supported by the data? Ans. Yes, the discussion and conclusions are supported by results.

REF: 6 Are limitations of the work clearly stated? Ans. Limitations of the study has to be written by the authors.

RESPONSE: We have supplemented new sub headings in discussion section. Please confirm the revised MS. In addition, we modified Limitations section.

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

REF:8 Do the title and abstract accurately convey what has been found? Ans. Suggested changing the title

REF:9 Is the writing acceptable? Ans. Yes, the writing is acceptable.

REF:10 Title: I would suggest "Factors associated with changing poor mothers’ care-seeking behaviours: findings from a cross-sectional study in Granada, Nicaragua"

RESPONSE:
Dr. Jasim Uddin, we are grateful your suggestion on our title. We would like to cordially accept your proposed title. We fully agreed that our study design was a cross section study, therefore previous title was to be modified. We have accepted to change the title as you suggested, though it may not be the perfectly same as your suggestion.

REF:11 Background (page 6, last para): "The objectives of the study were.........................using the child nutritional status data set (28)". Please write few sentences about that study and data set for more clarity of readers about present study context.

REF:12 Methods:
- The study area was Nandaime municipality in Granada. How the study area was selected? Why not in other areas?

RESPONSE:
We have revised Method section, and provided more detailed information on this point.
- The study area was Nandaime municipality in Granada. How the study area was selected? Why not in other areas?

RESPONSE:
We were asked the same comment from other reviewer (Reviewer 1). Please refer our response for the REF: 5 from the Reviewer 1. However, we copied our response below.

First, in terms of child nutrition aspects, Granada province can be considered as representative of the country from the proportion of both child stunting (25%), underweight (12%) indicators presented in UNICEF, States of the Worlds’ Children 2001, even in 2003. Demographic and Health Survey (DHS) 1998, which was available at the planning stage of this survey also presented the similar level.

Second, this study was conducted as a base line survey for Project for strengthening Granada Community Health supported by JICA (Japan International cooperation Agency). There were 4 municipalities in the project catchment area, however, Nandaime was selected by large population size, accessibility to households visit by the researchers, and communicability in Spanish. Since we intended to study not only health center users but also all the mothers who lived in the target communities. We accessed to vulnerable, poorest mothers, who did not read nor write.
REF:13  Sampling part is very unclear. Please clarify about cluster. Each cluster consists of how many household/population…….? How the clusters were created? Three clusters were excluded from how many clusters? Thirty-seven clusters were selected from how many total clusters? Why 10 and 27 clusters were used from urban and rural areas respectively? Why not the equal number of clusters from both the areas? What was sample from each cluster? How this sample was selected?

RESPONSE:
We appreciate your right question. We revised the sampling section, and described the details of the sampling method.

1. We added information on ‘sample size calculation’, ‘sampling method’.

2. We visited all the households in the selected clusters, referring child immunization list from the municipal health office.

3. 3 clusters were excluded from 40 clusters due to hard accessibility and time limitation.

4. 10 clusters cover all the urban population. The rest of 27 clusters out of 30 clusters needed to meet the required sample size.

REF:14  Please provide definition of “poor” in method section.

RESPONSE:
We revised the methods section, and defined who were the poor, and not poor. We had two strategies:

First, we followed the World Bank’s definition, used in MDGs (Millennium Development Goals) category of the ‘absolute poverty’: living below 1US$ per day, and after 2005, they started to use living below 2US$ per day as the “absolute poverty’.

Moreover, ECLAC (Economic Commission in Latin American Countries) use the people living below 2US$ per day as the “absolute poverty’.

Therefore, we defined ‘not poor’ for those who live more than 2 US $ per day. We believe this categorization is quite reasonable.

Second, we used quartile categorization for ‘Relative Poverty’ from the average monthly income. This category is also reasonable, since we decided to cut off point of classification from the statistical analysis.

REF:15  The authors analyzed old data set (data were collected in 2002). Is it possible to supplement by recent data?
RESPONSE:
We also received the same comments from other reviewers. As we responded, our data set was old enough, however, up to now (2009) there is no published data on this issue from Nicaragua.

As we described in background section, we should pay more attention to not only the health outcome but also end user’s perception, attitude or opinion for the health services. However, these information are surprisingly scarce. So we decided to submit this study evidence.

To provide more precise observation and interpretation of the data, we also included recent references, supplemental data. In addition, we confirmed recent socio demographics of the target area.

REF:16  Please elaborate about data collection procedure. Who collected data? Their education, experience, training, number of interviews done every day by each interviewer, measures taken for data reliability and quality control.

RESPONSE:
We provided the details information on revised MS. Summary are as follows:

1. We recruited 16 research assistants. Most of the research assistants were clinical officials of the Granada health office, Ministry of Health, Nicaragua (SILAIS Granada). They were medical doctors, registered nurses, assistant nurses, midwives, and medical university students. We assigned two members into one team, at least one of the member had anthropometric measurement skill for the infants.

2. We had 2days training for the research assistants, and we conducted continuous 7 days field research. We met every day 8:00 am at the Nandaime health center, and had about 40 minutes meeting, and preparation. Household visit and research carried out from 9am to 15:30 pm. After everyday research work, we gathered again, and two of the main research assistants checked the questionnaire. If we found the blank or the parts we could not understand well, immediately we confirmed the research members before going back to their home. If we had some problems to be shared, we held a meeting for 30 minutes around with all the researchers.
Basically each research team visited all the houses of selected cluster, and they were asked to collect at least 20 mothers and eligible 20 children data.

REF:17  Results: -Table 2: Child death experience before among group-3 was largely higher than other two groups. I am wondering about its interpretation.

RESPONSE:
We are grateful to the reviewer for noticing the error in the Table 2. However, after the certain discussion, we decided to remove original Table 2, and provided whole data in Table 1. Because we did not find any significant differences on child death experience among Group 1 to 3.
Results: As a public health person I am curious to know difference of care seeking behaviours among poor mothers of urban and rural areas. Please provide a table presenting care-seeking behaviors of the mothers of the two groups.

RESPONSE:
We are grateful receiving this comment. We checked the data, and performed stratified Chi Square test first. We found significant difference in care-seeking behaviors only between poor mothers and not poor mothers who were living in the ‘rural’ zone (N=389, poor mothers living in rural area :n=144, p<0.05). After that we performed logistic regression analysis on this figure (variable: the poor living in the rural area), unfortunately this variable could not survive in the final model, however, we added this variable in the new Table 6 (n=144, COR:1.06, p=0.824, see Table 6, 6th variable from the top).

Discussion: Information about limitations of the study is not available. The authors should describe about limitations of the study.

RESPONSE:
We have been pointed out the similar suggestions from Reviewer 1 (REF 12). We have described limitations in the end of discussion section. However, it was not sufficient enough, we revised it. Moreover, we put sub headings in each section to be understood easier.

Main limitations are as follows:
1. Study design: since our study was a cross sectional study, we could not identify the causal relationship between possible affecting factors and target mothers’ behavioral change. Thus, we could not logically explain on scientific behavioral change, comparing any longitudinal study.
2. We selected samples using systematic random sampling, and targeted average province in terms of child nutritional status in the existing data. However, Granada province is geographically close to the capital city. Therefore, we have some limitations to generalize our findings to the whole country.
3. To measure anthropometric precisely, we assigned medical staff from the Granada provincial office. Some mothers possibly replied favorable answer for them.

Reference: Reference list is not available with

RESPONSE:
We sent the references to the editor when we submitted this original MS. However, unfortunately or accidentally our references was not sent to the reviewers. Now we revised references list as well, hope that this time you could read it. This time we will confirm the editors.
Reviewer 3's report

Title: What changes poor mothers' child care-seeking behaviors?: a cross sectional study in Granada, Nicaragua

Version: 2 Date: 12 November 2009

Reviewer: Florence Mirembe

REF:1 Am wondering about the title, the word “Change”. I think change is observed over time. I find a cross sectional study having a problem to observe change? What do you think?

RESPONSE:
We have also received the same comments from other reviewers. We perfectly agree to the reviewers’ suggestion. As the reviewer 2 (REF: 10) suggested as well, our original title was not applicable for a cross-sectional study.

We have changed title as follows: How poor mothers seek care? Factors affecting changing poor mothers' care-seeking behaviours on child illness: findings from a cross-sectional study in Granada, Nicaragua'

REF:2 Abstract: In the result section; Sentence 2 starting with “We also determined--------“This sentence is in the paragraph for methods. In the same paragraph, the sentence starting with "second choice varied" may be you need to consider mentioning the varied choices

RESPONSE:
We have drastically revised abstract section, and provided more substantial information. Please find the revised version.

REF:3 Background: It is rather long, and no Key words are spelt out

RESPONSE:
We rechecked it, and added Key words in the appropriate space.
Key Words are; care-seeking behavior, child, developing countries, Nicaragua, z-scores

REF:4 Methods: Here there is target population and inclusion criteria put together. These can be separated for clarity.

RESPONSE:
We perfectly agree to the reviewers’comment. We have revised Methods section. We described not only inclusion criteria but also exclusion criteria as well.
**REF: 5 Sampling:** It will be nice to beef up the sampling procedure. It is unclear how you sampled the different clusters at each stage. Describe the randomization process. Also outline how you got to the sample size of 356 for each urban and rural. Are these households or individual women. Suppose in the household you had two women who qualified to be recruited, how did you handle that situation?

**RESPONSE:**
We have added information on our sampling procedure. Casualy in our eligible participants we did not meet any twins, nor two eligible children aged 0-23 months from the same mother.

**REF: 6 Data Collection** The data was collected in 2002, is it still valid 7 years later?

**RESPONSE:**
We also received the same or similar comments from all other reviewers (reviewer 1 and 2). As we responded, our data set was old enough, however, up to now there is no published data on this issue from Nicaragua. In this sense, this data is precious one, and we believe that it worth publishing.

As we described in the background section, we should pay more attention to not only the health outcome but also end user’s perception, attitude or opinion for the health services. However, information is still surprisingly scarce.

To provide more precise observation and interpretation of the data, we also included recent references, supplemental data to support data set. In addition, we confirmed recent socio demographics of the target area.

**REF: 7 Data Collection** I also think the process of data collection should be described in more details to appreciate the process.

**RESPONSE:**
We described more information, and modified the original MS on data collection section.

**REF: 8 Results:** Predictors of Change; this study was a cross sectional one how did you find out about change?

a) For change you need a different study design,

b) Need a follow up study Didn’t you think that what was observed was a process of taking a positive action other than change as this may be the norm in that community and it was also observed once not over time?

**RESPONSE:**
Absolutely we agree to the reviewers’ suggestions. We assume that to take a positive action is a process of some changes. We believe that switching the health service choice can be also defined as ‘change’ of choice.

In the field survey, we observed surprisingly high proportion of mothers who chose the rural
health post as the first choice of medical care. We have asked mothers about their past experiences, asking to remember their common behaviors, not focusing on one incident. Therefore, this study is a cross-sectional, however, their answers may reflect common behaviors when the mothers meet the child illness.

Our definition of behavioral ‘change’ (switch the choice in the second care-seeking behavior) in this study was as follows:

1. From no treatment, or self treatment (home based care), self medication to access to the any health service positively.
2. From rural health post to public health center, hospital, or private clinic.
3. From public health center to private clinic, or to tertiary hospitals.