Author’s response to reviews

Title: Prevalence and Correlates of Diagnosed and Undiagnosed Hypertension in the Indigenous Kuna Population of Panamá

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Author’s response to reviews:

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Dear BMC Public Health Editorial Office,

Thank you for the opportunity to provide modifications to our paper based on comments made by the reviewers. We addressed all concerns in the manuscript, highlighted the changes in the updated manuscript, and have responded to each below. We hope that these changes are acceptable and look forward to the publication of the manuscript.

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Reviewer 1

General comments
1) The quality of English should be improved. Please ask highly qualified native speaking English with expertise in Medicine/Public Health to help for this task. You can also ask the help of professional writers. Text has been reviewed in whole with grammar and sentence structure updated for clarity and specificity.

2) All sentences should not be started by a numeric term. This has been revised in the abstract and results. See page 2 and 9.

3) Please consider revising the reporting of the study with STROBE guidelines for cross sectional studies. We have reviewed the STROBE guidelines to ensure all appropriate information is incorporated into the manuscript and added specific details if not currently present. Changes to phrasing or additional information has been highlighted throughout, including abstract, methods, and results sections to match STROBE guidelines.

Major comments

1) I suggest to the authors to use the term “(Un)diagnosed hypertension” instead of “(Un)recognized hypertension”. Undiagnosed hypertension well reflect and clearly state the difference with diagnosed hypertension. This has been replaced throughout the manuscript, including title and keywords, abstract and the body of the text.

2) Describe the design of the study. Specify if this is a cross-sectional study. This has been specified in the abstract and methods. See Abstract page 2 and Data Collection section on page 5.

3) Specify if a consecutive sampling was used. We have specified in the methods that a convenience sample was used. See Data Collection section on page 5.

4) Authors stated that “biological measures” were collected. Which biological measures? What types (blood sample?)? For measuring what? Biological measures collection was limited to an A1c measure for investigation of diabetes. As this was not relevant to measures in this paper our reference to its collection has been removed and more detail was added regarding the blood pressure measurement in particular. See Outcomes section of the Methods on page 6.

5) “few individuals approached declined to participate”. The exact number should be given. We have added details into the methods to specify that less than 10% of those approached agreed to participate. See page 6.
6) “Based on conversation with community leaders to understand the meaning of income levels in the context of the community”. Do any preliminary PUBLISHED data exist to support this statement? There is no published data on the income categories of the Kuna Indians, and therefore we relied on community input for this definition. We have added this statement to the methods. See demographic variable section on page 7.

7) Statistical analysis. It is not clear how frequencies can help to describe continuous data. The statement has been rephrased to clarify that means and standard deviations were used to describe continuous data and frequencies were used to describe categorical data. See statistical analysis section on page 8.

8) “two adjusted multiple logistic regression models”. It would be better to write: “We performed two multiple variable logistic regression analysis. The first model…” This has been updated. See statistical analysis section on page 8.

9) “Secondly, proportions and confidence intervals for each of the three outcomes of interest (>=130/80mmHg cut-point, >=140/90mmHg cut-point and unrecognized hypertension) were compared using chi2 tests for categories of demographic factors.” This sentence should be rewritten. The message is confusing. The sentence has been rephrased. See statistical analysis section on page 8.

10) The term “predictors” should be avoided since the authors performed a cross sectional study. We have replaced the phrase predictors with independent variables. See updated phrasing in statistical analysis section on page 8.

11) Results should include the response rate. We incorporated information on the response rate in the Data Collection section of the Methods section. Please see page 6.

12) Report the mean age with standard deviation. This has been added to the results section on page 9, and to Table 1 on page 18.

13) Report the median family dependents. This has been added to Table 1 on page 18.

14) The term “Approximately” should be avoided when reporting results. This has been removed with the exact term replaced in the Results section on pages 9 and 10.

15) When reporting the prevalence in the text, report alongside the number of cases. This has been added on page 9.
16) “Monthly income prevalence of hypertension...”. Do you want to write, prevalence of hypertension by monthly income accordingly? Please revise if yes. This has been revised on pages 9.

17) In the Tables 1, 2, and 3, report in each line the n and %. Actually, only the % were reported. This has been updated on pages 18-20.

18) The paragraph describing findings reported in the Table 2 should be shortened. First, text should not repeat data report in the table and should be limited on interpretation. Second, in the Table 2, authors should report the exact value of p value comparing different prevalence instead of giving only the value in the foot of the table. Same comment for Table 3. This has been revised on pages 9, and 19-20.

19) The Table 4 and 5 should be revised (as below). Please look at the attached file. For these tables, authors should report the n and % for each variable. Authors should also report firstly the crude odd ratio performed through a univariable logistic regression analysis before reporting the multivariable model (in the same table), alongside with p value in each case. This has been revised on pages 21-22.

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>n (%)</th>
<th>Univariable analysis</th>
<th>Multivariable model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Odds ratio (95% CI)</td>
<td>P value</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Adjusted odds ratio (95% CI)</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>Total number of males</td>
<td>Number of males with the outcome (proportion of males with the outcome)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>Total number of females</td>
<td>Number of females with the outcome (proportion of females with the outcome)</td>
<td>0.35 (0.11-1.15)</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

20) Define “CI” in footnote of tables. This has been revised. See pages 19-22.
Minor comments

1) Add a reference for hypertension diagnosis. This has been added. See page 7 in the Methods for the citation of hypertension definition and new citation number 27.

2) “education was dichotomized…”. The term "dichotomized” should be only used if the variable can only have two possible responses. This has been revised to be phrased as characterized. See page 7 in demographic variables.

Reviewer 2

This is an epidemiological study entitled "Prevalence and Correlates of Recognized and Unrecognized Hypertension in the Indigenous Kuna Population of Panama". The paper addresses a topic relevant to Public Health, discussing the health of indigenous peoples in Latin America. It presents updated bibliography on the subject and that dialogues with the results of the study. However, in my opinion, some weaknesses have been observed and deserve to be better presented:

Methodology:

1) In this section I suggest that the criteria applied in the statistical analyzes, especially for the Logistic Regression model, be better described. In this way, I suggest to present the criteria used to maintain the variables in the adjusted model as well as the method used to withdraw or include the variables throughout the analysis process, since many variables presented in tables 4 and 5 were not statistically significant. This section has been updated to explain the reasoning behind including all variables regardless of significance. See statistical analysis section on page 8.

Results

2) In the Results section, I suggest reviewing the formatting of all tables, which are in frame format. Formatting of tables has been revised to incorporate feedback from reviewers, see pages 18-22.

3) In addition, all titles of the tables should be reviewed, including information on the results presented, population and year of data collection. Present in the note of the tables which statistical tests were applied in the analysis. Titles and footnotes of tables have been updated. See pages 18-22.
4) In table 1: Given the difference between sex categories, I suggest that all demographic variables be described by sex. This study was not designed to test sex differences, but rather to describe the study population and evaluate correlates of hypertension and undiagnosed hypertension. Therefore, making Table 1 focused on sex differences is not consistent with the objectives of the study.

5) To present justification for not having adjusted the model for the diagnostic variable of hypertension above 140 / 90mmHg or to present this model and include it in the paper. We originally ran both models, first for 130/80 and second for 140/90. The results were consistent, however, the estimates for the 140/90 models were unstable given the prevalence was lower and sample of those with hypertension smaller. Given guidelines and prior studies conducted in Panama, we chose to focus on the 130/80 cutpoint model.

Reviewer 3

The study is of great interest. It highlights hypertension among the indigenous people of Panama who are undergoing transitory life from traditional to modern. There is need to understand the prevalence and risk factors of hypertension in this population and update it.

Abstract:

1) Define clearly recognized and unrecognized hypertension in the method section of the abstract. This has been updated in the abstract on page 2 as well as in the methods on page 7.

2) Re-phrase the first sentence of conclusion. This sentence has been reworded, see page 2.

Methods:

3) The sample size is small. Include how it was determined. This was a cross-sectional study of a community sample in Panama. We invited participants during the one week while in the community to participate and had a 90% response rate. This was the sample that was feasible for the team to complete during this time and had adequate power to provide reliable estimates of prevalence. This information has been added on pages 5-6 to clarify the process of recruitment.

4) Blood pressure was measured thrice. What was the interval in minutes between the measurements and how were the participants seated? Where was blood pressure
measured? Arm? And which arm? For all the participants? We have expanded the information regarding blood pressure measurement to answer this questions in the Outcomes in the Methods section, see page 6.

Outcomes:

5) How was recognized hypertension defined? Recognized hypertension was defined by participants reporting whether any doctor or healthcare worker ever told them that they have high blood pressure or hypertension? Individuals who responded yes to either doctor or healthcare provider were categorized as having high blood pressure. Based on recommendation from a prior reviewer this has been changed to diagnosed hypertension. Please see Outcomes in the methods section on page 7 for this updated description.

6) Was data collected on the question of whether participants were on high blood pressure medication or not? And if yes, how were such classified? This information was not included in our measurements.

7) What is the difference between high blood pressure and recognized high blood pressure in the study? The clinical measurements of high blood pressures based on two cut points of: $\geq 130/80$mmHg and $\geq 140/90$mmHg. Recognized (awareness of hypertension) is a self-reported measure of whether a doctor had diagnosed an individual with high blood pressure. Please see Outcomes section in the methods on page 7 for more clear phrasing in the manuscript.

8) Present results differentiating into clinic based and community based participants. There was no differentiation between where participants heard about the study (whether in the clinic or in the community). All participants were members of the Ustupu/Ogobsucum community and all participants completed the survey at the single local clinic. Please see pages 5-6 for a more complete description of the data collection process.

9) Statistical analysis: "Third, two adjusted multiple logistic regression models were run to understand the independent correlates of hypertension and unrecognized hypertension." How were the variables for these models selected? Was bivariate analysis done? If yes, include the table. Bivariate analyses are reported in Table 2 with updated information based on reviewer comments. The statistical analysis section has been revised to clarify bivariate analyses were conducted and how variables were selected. Please see pages 8 for the description and page 19 for the table.

10) "First, it will be important to gather information to understand why increasing income is associated with an increased prevalence of hypertension." Re-phrase this sentence. There
are explanations as to why this is so. We have rephrased this to specify that given this particular population and the lack of information having more details on this relationship will be helpful to design interventions. Please see revisions to the discussion page 11.

General comments:

11) Major revisions: Apart from the comments above. Rewrite the results and discussion sections. We have revised text throughout results and discussion.

Editorial Policies

In accordance with BioMed Central editorial policies and formatting guidelines, all submissions to BMC Public Health must have a Declarations section which includes the mandatory subsections. We have added the ‘Authors Information’ below the ‘Acknowledgements’ section of the Declarations on page 15.

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