Author's response to reviews

Title: Risk Factors of Hypertension among Adults Aged 35-64 Years Living in an Urban Slum Nairobi, Kenya

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Risk Factors of Hypertension among Adults Aged 35-64 Years Living in an Urban Slum Nairobi, Kenya
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Dr. Yajun Liang, MD PhD
Associate Editor
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Dear Dr. Liang

We appreciate your comments and those of the reviewers. We respond in bold below to the comments of each of the reviewers (which we have italicized). Modifications to the manuscript are highlighted in bold.

Reviewer #1
Methods
1. Page 4-5 – Methods of sampling is a little poorly described. How the sample was recruited and how is the representativeness should be described. The inclusion criteria and the exclusion criteria, the measurement of blood pressure should be introduced in detail. The matters needing attention, environment temperature, measurement time, measurement position should be introduced in detail, too. Because of blood pressure is the main index of this survey. If the BP monitor has been verified with the standard international protocol? If yes should be noted clearly, if not should be explained the reason. Clearly this could be a large source of bias for this type of study.

We appreciate the comment, which highlights that we need to clarify the methods of sampling inclusion exclusion criteria and blood pressure measurements. We have modified the manuscript line 64 to 74 to state:

Study design and procedures

We conducted a community based cross sectional study in Soweto, Gatwikira and Mashimoni villages in Kibera during the period June to August 2013. Soweto and Gatwikira villages have population range between 25000 and 29000 and are involved in active population based infectious disease surveillance, while the adjacent Mashimoni village has approximately 24000 inhabitants. Details and activities of the surveillance population have been described elsewhere [1]. The study sample comprised of 1700 households randomly selected in equal numbers from the surveillance population and the adjacent village. Residency was defined as having lived in the selected villages for at least 4 consecutive months in a year. All adults residents aged 35-64 years within the selected households were eligible to participate in the
study. Only one participant per household was enrolled into the study. Individuals less than 35 years and older than 64 years of age were excluded from the study. Pregnant women, severely ill and bedridden residents were also excluded from the survey.

Environmental temperature was not considered in this study and thus a limitation. However, blood pressure measurements were performed as per the World Health Organization (WHO) standard guidelines for surveillance of Non Communicable Diseases (NCD) risk factors. The Omron digital blood pressure monitor used has been validated and referenced for use in low resource setting reference [21].

2. Questionnaire – details and validity of this are not presented.

The WHO STEPs is a validated and standardized approach that can be applied in any setting depending on resources available and facilitates comparisons of risk factors within the country or across countries reference [18]. Information collected in the questionnaire are outlined on page 4 and 5 line 86-110. They included information socio demographic variables, behavioural risk factors, anthropometry and blood measurements.

3. Smoke – the reference of current smoking is not clear, how to define the non smokers and past smoker should be introduced in detail.

We have provided clarification in operation definition line 129-131. Smoking: Participants who smoked one or more cigarettes in the last 30 days were referred to as current smokers. Non smokers had never smoked any cigarette while ex-smokers who had stopped smoking more than one month before the survey.

4. Regression – how was this performed? What methods exactly were used to include and remove variables?

Multivariable backward regression model was used to determine significant risk factors associated with hypertension. All independent variables were entered into the multivariable models and removed in a backward stepwise procedure if their p-value exceeded 0.10. Clinically important variables (age and gender) were selected for retention .Level of significance for testing of each model was set to an alpha of .05. The adjusted model included: age, sex, marital status, education, occupation, physical activity, body mass index (BMI, kg/m²), wealth quintile, smoking and alcohol consumption.

5. Results
In table 1 the results of comparison between the genders should be added as additional column in this table

We have added the p value column to table that describes the characteristics of study participants.

6. In table3 the definitions of major variables, the calculation method of AOR, and the abbreviations should be added as notes of this table.

Notes have been included in the table now relabelled table 4.

7. Figure1 isn't suitable for describing the prevalence rates of normal, prehypertension, stage1 hypertension, and stage2 hypertension, because the different color areas included those both SBP and DBP are higher than the criteria, not include those only SBP or only DBP is higher than the criteria.

We appreciate this valuable suggestion. We have replaced the figure presented by a table that clearly defines the blood pressure classification per JNC VII guidelines.

8. Fig 2 if the difference between both genders has statistic significance should be indicated clearly in this figure.

There is no statistical difference in prevalence of hypertension by gender. However there’s is an association of increasing age and hypertension.

Minor Essential Revisions

If the quality control has been done in this survey, if yes should be introduced in the method part;
"Male and female", "men and women" should be consentaneous in one paper; Some spelling mistakes should be corrected, and some syntactic error should be mentioned and corrected by someone whose mother language is English carefully.

Data quality was controlled in the field by a team lead and the investigator. They performed random audits of interviews conducted and checked questionnaires for completeness and validity of data collected.

The words men and women have been replaced by males and females as suggested herein.

Reviewer #2:

1. Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)
The sampling procedure should be described in more details to indicate that the selected participants was representative of the studied population. The authors should introduce the datasets from 2 previous surveys that was used to select the participants for the present study to show that they were appropriate to use as sampling frames for the current survey. It was also not clear how the
participants were selected, directly select participants or select households first then participants... The results part showed that the studied population included 42% men and 58% women so the question raised about the representativeness of selected sample.

We have modified the manuscript to state:

We conducted a community based cross sectional study in Soweto, Gatwikira and Mashimoni villages in Kibera during the period June to August 2013. Soweto and Gatwikira villages have population range between 25000 and 29000 and are involved in active population based infectious disease surveillance, while the adjacent Mashimoni village has approximately 24000 inhabitants. Details and activities of the surveillance population have been described elsewhere [1]. The study sample comprised of 1700 households randomly selected in equal numbers from the surveillance population and the adjacent village. Residency was defined as having lived in the selected villages for at least 4 consecutive months in a year. All adults residents aged 35-64 years within the selected households were eligible to participate in the study. Only one participant per household was enrolled into the study. Individuals less than 35 years and older than 64 years of age were excluded from the study. Pregnant women, severely ill and bedridden residents were also excluded from the survey.

1700 participants were targeted for the survey with equal gender distribution but only 1558 participated. 142 participants selected were not found at home and 30 excluded from the analysis as they exceeded the age limit requirements.

2. Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Tables missing labels and figures have been corrected as indicated in the attached tables and figures document

2.1. Height was measured to the nearest 0.5 cm and weight was measured to the nearest 0.5kg seems too big to have required accurate data. Resting enough time before taking blood pressure measurement is required but not mentioned in the measurement part.

We appreciate the correction, this was a typo error and we have corrected the measurements of the height and weight to the nearest 0.1cm and 0.1 kg respectively.

2.2. Awareness and control of hypertension, wealth index, "current" use of hypertensive medication need to be defined in the Methods.
As recommended by the reviewer, a definition is provided in the operation definition page 5 lines 119-124

Awareness of hypertension: based on the subjects’ verbal report of a prior diagnosis of hypertension (or high blood pressure) by a health professional

Treatment: verbal report on current use of medication for lowering elevated blood pressure

Control: Blood pressure <140 systolic and <90 mmHg diastolic among the population defined as having hypertension and treated

2.3. In discussion, the authors should discuss why the investigated lifestyle factors such as alcohol intake, smoking, vegetable and fruits were not found as risk factors of hypertension in this population. Other diet factors, especially salt intake which play important role in hypertension but not investigated needs to be mentioned in the discussion and the limitation of the study.

The reasons why the alcohol intake, smoking, vegetable and fruits were not found as risk factors of hypertension in this population is indicated as a limitation in page 12 lines 326-330.

2.4. In conclusion: The conclusion should mention the main findings observed of the study. "Early identification of the risk factors associated with hypertension presents an important opportunity for primary prevention that emphasizes lifestyle changes to curb and the onset of hypertension” is not the finding of this study.

The conclusion to the study has been revised to read:-
Hypertension in the slums is a public health problem affecting at least one in three adults aged 35-64years. The risk factors for hypertension are likely to increase as the population ages. Effective measures that target modifiable risk factors associated with hypertension have the potential to curb hypertension.

2.5. Typo errors: line 107, 108, 142, 225. Table 1: title of the first column is missing.
Thank you for noting these typo errors that have been edited as indicated in bold in the document.

Regards
Beatrice Olack