PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (**http://bmjopen.bmj.com/site/about/resources/checklist.pdf**) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Sex-specific prevalence, inequality, and associated predictors of hypertension, diabetes, and comorbidity among Bangladeshi adults: Results from a nationwide cross-sectional demographic and health survey
AUTHORS	Ali, Nausad; Akram, Raisul; Sheikh, Nurnabi; Sarker, Abdur; Sultana, Marufa

VERSION 1 – REVIEW

REVIEWER	Muhammad Abdul Baker Chowdhury University of Florida, United States of America
REVIEW RETURNED	04-Feb-2019

GENERAL COMMENTS	Review Feedback: Sex-specific Non-Communicable Diseases among Bangladeshi adults: A case of diabetes, hypertension and co-morbidity In the above-titled study, the authors aimed to determine prevalence, awareness and determinants of diabetes mellitus among tailed aged women in Bangladesh from nationally representative Bangladesh Demographic and Health Survey (BDHS). The potential for inferences is clearly consistent and the findings can be relevant in the perspective of national public health. However, my major concern and main criticism is the absence of originality in the objectives proposed by the author (s). There are many studies dealing with diabetes, hypertension prevalence, risk factors and comorbidities in the specific group of population (Men and women age 35 years and older) in Bangladesh using the same dataset (2011 BDHS); therefore, the current form of the manuscript brings almost nothing of new. The current manuscript is not attractive. Please see the below reference for details. Akter, S., Rahman, M. M., Abe, S. K., & Sultana, P. (2014). Nationwide Survey of Prevalence and Risk Factors for Diabetes and Prediabetes in Bangladeshi Adults. Diabetes care, 37(1), e9. Akter, S., Rahman, M. M., Abe, S. K., & Sultana, P. (2014). Prevalence of diabetes and prediabetes and their risk factors among Bangladeshi adults: a nationwide survey. Bull World Health Organ, 92(3), 204-213, 213a. doi: 10.2471/blt.13.128371 Chowdhury, M. A. B., Uddin, M. J., Haque, M. R., & Ibrahimou, B. (2016). Hypertension among adults in Bangladesh: evidence from a national cross-sectional survey. BMC Cardiovascular disorders, 16(1), 22. doi: 10.1186/s12872-016-0197-3 Chowdhury, M. A. B., Uddin, M. J., Khan, H. M., & Haque, M. R. (2015). Type 2 diabetes and its correlates among adults in Bangladesh: a population based study. BMC Public Health, 15, 1070. doi: 10.1186/s12889-015-2413-y

Khan, M. M., Gruebner, O., & Kraemer, A. (2014). The geography of diabetes among the general adults aged 35 years and older in Bangladesh: recent evidence from a cross-sectional survey. PloS one, 9(10), e110756. doi: 10.1371/journal.pone.0110756

Rahman, M., Nakamura, K., & Kizuki, M. (2015). Socioeconomic differences in the prevalence, awareness, and control of diabetes in Bangladesh. J Diabetes Complications, 29(6), 788-793. doi: 10.1016/j.jdiacomp.2015.04.011

Rahman, M., Williams, G., & Mamun, A. A. (2017). Hypertension and diabetes prevalence among adults with moderately increased BMI (23.0-24.9 kg/m2): findings from a nationwide survey in Bangladesh. Public Health Nutr, 20(8), 1343-1350. doi: 10.1017/S1368980016003566

Rahman, M. S., Akter, S., Abe, S. K., Islam, M. R., Mondal, M. N. I., Rahman, J. A. M. S., & Rahman, M. M. (2015). Awareness, Treatment, and Control of Diabetes in Bangladesh: A Nationwide Population-Based Study. PloS one, 10(2), e0118365. doi: 10.1371/journal.pone.0118365

My suggestion to the author (s) focuses their attention again in the dataset is identify more attractive and original objectives. Sorry about the unfavorable feedback, but I believe that authors have a huge and well-elaborated dataset with potential for publication of findings useful to health professional and organizations in Bangladesh.

REVIEWER	Natasha Sobers Lecturer, Epidemiology George Alleyne Chronic Disease Research Centre, University of West indies, Barbados
REVIEW RETURNED	18-Mar-2019

GENERAL COMMENTS	Comments on the paper, "Sex-specific Non-Communicable Diseases among Bangladeshi adults: A case of diabetes, hypertension and co-morbidity" I would like to congratulate the authors on attempting to add to data on prevalence rates for the NCDs which are contributing to the dual burden being experienced by Bangladeshi adults. The paper however is not as clear in its explanations as it could be. Title: I would recommend using the term prevalence rates in the title to enhance its clarity for the reader. It should be clear whether this paper is about incidence/prevalence or mortality/survival from the title. The abstract is generally vague. A definition for the word "co-morbidity" should be provided somewhere in the abstract. There are many possible co-morbidities and it would be useful to know from the abstract which ones are being analysed here. The variables used in analysis ought to be listed. AOR abbreviation in abstract requires explanation. State the type of regression analysis used in abstract. Introduction:

Page 4, Line 10: It's fairly standard to refer to LMICs – the authors have removed the C usually seen in this abbreviation.
Generally: There seems to be a lot of information on NCDs in Bangladesh so it wasn't clear to me that this study was critically needed. The advantage of this study though was the use of Biomarkers as the authors noted.

Methods:
Page 6: Given that a major reason for doing this study was to obtain the results of the biomarkers, the eligibility criteria used to choose persons who received these tests should be clearer. Were these by convenience sample or some other technique. This has significant implications for the extent to which the results can be extrapolated to the background population.
Page 6, Line 6: Do not state that anemia was measured, should mention hemoglobin was measured.

Page 6: The flow chart needs to begin with the 17,000 not with the 7839 chosen thereafter.

Page 7, Line 31: It should be clear, for which variables chi-squared was used.

Page 7, line 44: State how each of these was measured. It's not enough to say the methods are described elsewhere. The methods specific to this paper should be given in detail. For example, how was blood pressure measured? How many times measured?

Results
Table 1: 95% Cis are not needed for every variable in Table 1. Inserting 95 CI on age for example shows a misunderstanding of the reason for using CIs. This table should be about describing characteristics of study participants. CIs are used to relate the study population to the background population this is not necessary until we begin to look at the prevalence rates of main outcome variables.

Discussion
Page 13, Line 21: This statement (Latest report indicated that nearly all Bangladeshi adults are affected by at least one NCD risk factor) seems contradictory to your own results. Perhaps you can indicate which risk factors are referred to in the reference doc compared to this ones in your manuscript.

Page 13, Line 35-36: Our study observed that the prevalence of hypertension and diabetes were relatively higher among females and hypertension was mostly prevalent amongst all NCDs. This statement seems confusing to me. Do you mean it was more prevalent than diabetes?
Page 15, Line 33: Our study findings revealed alarming prevalence of hypertension. I would advise refraining from subjective statements like alarming prevalence. The rates are not as high as many other places. Perhaps the authors can make reference to their rates in the context of global and regional rates and refrain from subjective terms like alarming.

	Overall, the authors should work on their syntax and subject and verb agreement in some areas. The methodology is not clearly explained making this the most concerning aspect of the paper. The eligibility criteria/sampling mechanism used for the 7839 used to inform the diagnosis of diabetes and hypertension needs to be explained. This aspect of the methodology has the potential to be a fatal flaw.

REVIEWER	Rachael McLean University of Otago New Zealand
REVIEW RETURNED	17-Apr-2019

GENERAL COMMENTS	Thank you for the opportunity to review this interesting paper. It makes an important contribution to the literature. I recommend however that a number of revisions are made to the manuscript before it is suitable for publication. Title: I suggest "Prevalence of diabetes and hypertension among Bangladeshi adults: a population survey" or similar would be more appropriate. Sex-specific analyses are included in the manuscript, but not included in the analyses as outlined in table 3. Methods: More information is required about measurement of blood pressure, blood sugar, height and weight, and survey data (eg how did you define healthcare utilization, current drug use and exposure to mass media?). I suggest you use underweight consistently to describe BMI<18.5 kg/m2- you have used various terms throughout the manuscript. Can you please reference the Lorenz curve- many readers of BMJ open will be health professionals and not necessarily familiar with this. You say that you tested for anaemia (page 6 line 7) and yet no results are presented for this in the study. Did you also account for being on medication for diabetes in your definition of diabetes (page 6 line 34)? Results: I wonder if the authors would consider presenting some age standardised sex specific results for key variables? Table 1- I suggest remove the 95% confidence intervals for age and sex, and place of residence as these are describing the sample participants, and not making population inferences. I also suggest that you give age category strata for men and women separately, as a different age structure may explain some of the sex differences described subsequently. Table 2 contains a lot of information, and I am not convinced of its usefulness. I don't think percentages need to be reported to two decimal places. The p values need to be explained in the legend- what statistical tests produced the p values and what measures are included in each calculation- ie what hypothesis is being tested? Table 3: Please explain in the title that multivariate regression analysis was used, and explain in the tables what is included in each of the models in the legend. Findings relating to inequality are not well explained in the results for a healthcare journal where readers may be unfamiliar with

	Lorenz curves and Gini coefficients. Consider adding some detail or interpretation here. Figure 1 is included I presume at the suggestion of the Strobe statement. If so, any results should be taken out of the figure, and the top of the figure should include reference to all participants in the wider study(17,141 households) so that readers can understand how the final numbers included in this analysis have been accessed. Discussion: I think it would be useful to highlight key findings in the first paragraph of the discussion (see Skelton and Edwards, The function of the discussion section in academic medical writing, BMJ, vol 320, 6 May 2000). Please reference your statement about salt intake (page 14 line 44). Your statement "Our findings show that overweight or obese individuals had almost similar risk factors for hypertension, diabetes and comorbidity" is confusing, ambiguous and (as far as I can tell) not supported by the data presented in this paper. There is no mention in the discussion about the results that relate to wealth and inequity. This is an important omission. The data on inequity should be discussed and explained or omitted.

VERSION 1 – AUTHOR RESPONSE

Response to the comments of reviewer 1
Reviewer: 1
Reviewer Name: Muhammad Abdul Baker Chowdhury Institution and Country: University of Florida, United States of America
Please state any competing interests or state 'None declared': None Declared
Please leave your comments for the authors below Review Feedback:
Sex-specific Non-Communicable Diseases among Bangladeshi adults: A case of diabetes, hypertension and co-morbidity In the above-titled study, the authors aimed to determine prevalence, awareness and determinants of diabetes mellitus among tailed aged women in Bangladesh from nationally representative Bangladesh Demographic and Health Survey (BDHS).
The potential for inferences is clearly consistent and the findings can be relevant in the perspective of national public health. However, my major concern and main criticism is the absence of originality in the objectives proposed by the author (s). There are many studies dealing with diabetes, hypertension prevalence, risk factors and comorbidities in the specific group of population (Men and women age 35 years and older) in Bangladesh using the same dataset (2011 BDHS); therefore, the current form of the manuscript brings almost nothing of new. The current manuscript is not attractive. Please see the below reference for details.
Akter, S., Rahman, M. M., Abe, S. K., & Sultana, P. (2014). Nationwide Survey of Prevalence and Risk Factors for Diabetes and Prediabetes in Bangladeshi Adults. Diabetes care, 37(1), e9.
Akter, S., Rahman, M. M., Abe, S. K., & Sultana, P. (2014). Prevalence of diabetes and prediabetes and their risk factors among Bangladeshi adults: a nationwide survey.
Hypertension among adults in Bangladesh: evidence from a national cross-sectional survey. BMC Cardiovascular disorders, 16(1), 22. doi: 10.1186/s12872-016-0197-3 Chowdhury, M. A. B., Uddin, M. J., Khan, H. M., & Haque, M. R. (2015).
Type 2 diabetes and its correlates among adults in Bangladesh: a population based study. BMC Public Health, 15, 1070. doi: 10.1186/s12889-015-2413-y Khan, M. M., Gruebner, O., & Kraemer, A. (2014).

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The geography of diabetes among the general adults aged 35 years and older in Bangladesh: recent evidence from a cross-sectional survey. PloS one, 9(10), e110756. doi: 10.1371/journal.pone.0110756 Rahman, M., Nakamura, K., & Kizuki, M. (2015).

Socioeconomic differences in the prevalence, awareness, and control of diabetes in Bangladesh. J Diabetes Complications, 29(6), 788-793. doi: 10.1016/j.jdiacomp.2015.04.011 Rahman, M., Williams, G., & Mamun, A. A. (2017).

Hypertension and diabetes prevalence among adults with moderately increased BMI (23.0-24.9 kg/m2): findings from a nationwide survey in Bangladesh. Public Health Nutr, 20(8), 1343-1350. doi: 10.1017/S1368980016003566 Rahman, M. S., Akter, S., Abe, S. K., Islam, M. R., Mondal, M. N. I., Rahman, J. A. M. S., & Rahman, M. M. (2015).

Awareness, Treatment, and Control of Diabetes in Bangladesh: A Nationwide Population-Based Study. PloS one, 10(2), e0118365. doi: 10.1371/journal.pone.0118365

My suggestion to the author (s) focuses their attention again in the dataset is identify more attractive and original objectives. Sorry about the unfavorable feedback, but I believe that authors have a huge and well-elaborated dataset with potential for publication of findings useful to health professional and organizations in Bangladesh.

Response: Authors are thankful to the reviewer for the deep insights to our manuscript and kindly reviewed it critically. We agreed that there are several findings published earlier related to hypertension and diabetes. However, the originality of this paper is that we incorporated both conditions across sex in context of Bangladesh and also incorporated co-morbidity since these two are most prevalent and has not been jointly done earlier in context of Bangladesh. In addition, we have also incorporated inequality distribution of prevalence and heath care utilization across wealth index which shows new insights based on 2011 BDHS survey data.

Response to the comments of reviewer 2

Comment 1: I would like to congratulate the authors on attempting to add to data on prevalence rates for the NCDs which are contributing to the dual burden being experienced by Bangladeshi adults. The paper however is not as clear in its explanations as it could be.

Response: Authors express gratitude to the reviewer for kind appreciation.

Comment 2: Title: I would recommend using the term prevalence rates in the title to enhance its clarity for the reader. It should be clear whether this paper is about incidence/prevalence or mortality/survival from the title.

Response: Authors agreed with the concern of the reviewer. The term 'prevalence' has been added now in the title of the manuscript (please see the revised title in page 1)

Comment 3: The abstract is generally vague. A definition for the word "co-morbidity" should be provided somewhere in the abstract. There are many possible co-morbidities and it would be useful to know from the abstract which ones are being analysed here.

Response: Authors are thankful to the reviewer for raising the important concern. The abstract section has been revised now (Please see the abstract in page 2) and the term 'co-morbidity' defined for this manuscript has been incorporated as suggested. (Please see the abstract in page 2 lines 43-44).

Comment 4: The variables used in analysis ought to be listed.

Response: The major predictor variables have now been added in the abstract (please see page 2 lines 44-45). Further, a sub-section explaining explanatory variables has now been added in the method section (please see page 8 lines 216-234).

Comment 5: AOR abbreviation in abstract requires explanation.

Response: Authors are thankful to the reviewer for noticing that. The abbreviation has now been incorporated in the abstract (please see page 2 line 48).

Comment 6: State the type of regression analysis used in abstract.

Response: Type of regression analysis used has been added in the abstract (Please see page 2 line 47-48).

Comment 7: Introduction: Page 4, Line 10: It's fairly standard to refer to LMICs – the authors have removed the C usually seen in this abbreviation.

Responses: Revision has been done for the entire manuscript as per suggestion of the reviewer.

Comment 8: Generally: There seems to be a lot of information on NCDs in Bangladesh so it wasn't clear to me that this study was critically needed. The advantage of this study though was the use of Biomarkers as the authors noted.

Response: Authors agreed with the reviewer's concern. The rationale of the study has been revised in the revised version of the manuscript. Please see the paragraph in page 6 lines 129 to 146.

Comment 8: Methods:Page 6: Given that a major reason for doing this study was to obtain the results of the biomarkers, the eligibility criteria used to choose persons who received these tests should be clearer. Were these by convenience sample or some other technique. This has significant implications for the extent to which the results can be extrapolated to the background population.

Response: Authors agreed with the concern of the reviewer. The section related to sampling method and sample size has been modified entirely to make it clearer (please see page 7 lines 159 to 177)

Comment 9: Page 6, Line 6: Do not state that anemia was measured, should mention hemoglobin was measured.

Response: Corrected now as suggested. Please see page 7 line 172.

Comment 10: Page 6: The flow chart needs to begin with the 17,000 not with the 7839 chosen thereafter.

Response: Authors are thankful for the concern of the reviewer. We have revised figure 1 as per suggestion. (Please see the revised figure 1).

Comment 11: Page 7, Line 31: It should be clear, for which variables chi-squared was used.

Response: As per suggestion of the reviewer, variables are now specified now in the revised version of the manuscript. Please see page 10 lines 272-274.

Comment 12: Page 7, line 44: State how each of these was measured. It's not enough to say the methods are described elsewhere. The methods specific to this paper should be given in detail. For example, how was blood pressure measured? How many times measured?

Response: Authors agreed with the concern of the reviewer. A paragraph has been inserted now explaining detail method of measurements. Please see page 7 lines 178-189.

Comment 13: Results: Table 1: 95% Cis are not needed for every variable in Table 1. Inserting 95 CI on age for example shows a misunderstanding of the reason for using CIs. This table should be about describing characteristics of study participants. CIs are used to relate the study population to the background population this is not necessary until we begin to look at the prevalence rates of main outcome variables.

Response: Authors are thankful to the reviewer for the important concern. As per suggestion, CIs have been removed from background table (the background table also describes variables for males and females separately in the revised version). Please see revised table 1.

Comment 14: Discussion: Page 13, Line 21: This statement (Latest report indicated that nearly all Bangladeshi adults are affected by at least one NCD risk factor) seems contradictory to your own results. Perhaps you can indicate which risk factors are referred to in the reference doc compared to this ones in your manuscript.

Response: Authors agreed with the concern of the reviewer. The WHO report was mainly related to risk factors for NCDs such as tobacco use, obesity, DM, alcohol etc. The text has been modified accordingly (please see page 19, lines 394-408)

Comment 15: Page 13, Line 35-36: Our study observed that the prevalence of hypertension and diabetes were relatively higher among females and hypertension was mostly prevalent amongst all NCDs. This statement seems confusing to me. Do you mean it was more prevalent than diabetes?

Response: Authors agreed with the concern of the reviewer. The sentence has been revised now to make it clearer (please see page 19, lines 410-411).

Comment 16: Page 15, Line 33: Our study findings revealed alarming prevalence of hypertension. I would advise refraining from subjective statements like alarming prevalence. The rates are not as high as many other places. Perhaps the authors can make reference to their rates in the context of global and regional rates and refrain from subjective terms like alarming.

Response: Thank you for important insights. This sentence has been revised now as suggested (please see page 21 lines 462-464).

Comment 17: Overall, the authors should work on their syntax and subject and verb agreement in some areas. The methodology is not clearly explained making this the most concerning aspect of the paper. The eligibility criteria/sampling mechanism used for the 7839 used to inform the diagnosis of diabetes and hypertension needs to be explained. This aspect of the methodology has the potential to be a fatal flaw.

Response: The entire manuscript has been checked and modified accordingly to correct grammar and spelling. The figure(s) has been updated and the methodology section has been revised as per suggestions of the reviewer(s).

Response to the comments of reviewer 3:

Comment 1: Title: I suggest "Prevalence of diabetes and hypertension among Bangladeshi adults: a population survey" or similar would be more appropriate. Sex-specific analyses are included in the manuscript, but not included in the analyses as outlined in table 3.

Response: Authors are thankful for suggesting the title. The title has been revised as per suggestion of the reviewer and per journal format (please see the revised title in page 1).

Comment 2: Methods: More information is required about measurement of blood pressure, blood sugar, height and weight, and survey data (eg how did you define healthcare utilization, current drug use and exposure to mass media?). I suggest you use underweight consistently to describe BMI<18.5 kg/m2- you have used various terms throughout the manuscript.

Response: Authors are thankful to the reviewer for kind suggestion. Underweight has been described now as suggested throughout the manuscript.

Comment 3: Can you please reference the Lorenz curve- many readers of BMJ open will be health professionals and not necessarily familiar with this. You say that you tested for anaemia (page 6 line 7) and yet no results are presented for this in the study. Did you also account for being on medication for diabetes in your definition of diabetes (page 6 line 34)?

Response: The Lorenz curve has now been described to make it easier for public health professionals/readers. The text has been added in the method section of the revised version of the manuscript (please see page 9-10, lines 236-266).

Comment 4: Results: I wonder if the authors would consider presenting some age standardized sex specific results for key variables?

Table 1- I suggest remove the 95% confidence intervals for age and sex, and place of residence as these are describing the sample participants, and not making population inferences. I also suggest that you give age category strata for men and women separately, as a different age structure may explain some of the sex differences described subsequently.

Response: Authors are thankful to the reviewer for the kind concern. We have removed 95% CI from the table as per suggestion the reviewer (s). Table 1 is now modified 1nd male-female distribution of the socio-economic variables have now been added (please see revised table 1).

Comment 5: Table 2 contains a lot of information, and I am not convinced of its usefulness. I don't think percentages need to be reported to two decimal places. The p values need to be explained in the legend- what statistical tests produced the p values and what measures are included in each calculation- ie what hypothesis is being tested?

Response: The table has been modified and percentages are expressed in one decimal places. The test used for p-values have been added now in the footnote of the table. A figure is also incorporated to make it more reader friendly to compare difference of prevalence's among sex group (please see figure 2 in the revised version of the manuscript).

Comment 6: Table 3: Please explain in the title that multivariate regression analysis was used, and explain in the tables what is included in each of the models in the legend.

Response: The title and table has been updated as per suggestion of the reviewer (please see revised table 3)

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Comment 7: Findings relating to inequality are not well explained in the results for a healthcare journal where readers may be unfamiliar with Lorenz curves and Gini coefficients. Consider adding some detail or interpretation here.

Response: The text related to findings from Lorenz curve has been modified accordingly (Please see page 17 lines 355-362).

Comment 8: Figure 1 is included I presume at the suggestion of the Strobe statement. If so, any results should be taken out of the figure, and the top of the figure should include reference to all participants in the wider study (17,141 households) so that readers can understand how the final numbers included in this analysis have been accessed.

Response: Figure 1 has been revised as per reviewer's suggestion.

Comment 9: Discussion:

I think it would be useful to highlight key findings in the first paragraph of the discussion (see Skelton and Edwards, The function of the discussion section in academic medical writing, BMJ, vol 320, 6 May 2000). Please reference your statement about salt intake (page 14 line 44). Your statement "Our findings show that overweight or obese individuals had almost similar risk factors for hypertension, diabetes and comorbidity" is confusing, ambiguous and (as far as I can tell) not supported by the data presented in this paper. There is no mention in the discussion about the results that relate to wealth and inequity. This is an important omission. The data on inequity should be discussed and explained or omitted.

Response: Authors are thankful for the concern of the reviewer. The main findings of the study incorporated in the second paragraph of discussion section (please see pages 19-20, lines 410-427). The reference for salt intake has been added now (please see page 21 line 451). The text in the discussion section related to inequalities has been updated (please see lines 456-458) in the revised version of the manuscript.

VERSION 2 – REVIEW

REVIEWER	Muhammad Abdul Baker Chowdhury University of Florida, United States of America
REVIEW RETURNED	19-Jun-2019

| GENERAL COMMENTS | The authors did a substantial revision of the initial submission. The manuscript improved a lot. Here are some more feedback o consider.
1. There is a typo in the title: The words would be "predictors" not "Predicators".
2. Figures quality is low, please provide a better quality figure
3. In the statistical analysis please provide the details of the model selection procedure. How did you come out with the best model that was reported?
4. On page 8 line 37 the authors mention the application of sample weights recommended by BDHS. However, there is no mention of adjusting the clusters (the primary sampling units) and the strata. These adjustments do not alter the coefficients but they do alter the standard errors, usually in opposite directions.
5. On page 16 line 53-54 the author's reports overweight and obesity were significantly associated with the prevalence of hypertension, diabetes, and comorbidity as potential risk factors. In order to update references on overweight and obesity in the same study population, you can consider the updated literature by Chowdhury MA, BMJ Open. 2018 Jul 1; 8(7):e018468. DOI: 10.1136/bmjopen-2017-018468 |

REVIEWER	Rachael McLean University of Otago New Zealand

REVIEW RETURNED	08-Jul-2019

GENERAL COMMENTS	I would like to thank the authors for their revisions to the article, which have addressed the concerns outlined in my previous review. There are a few minor changes I wish to recommend, and I also recommend an editorial review of english language prior to publication. Changes: Page 6, line 53- I think you mean "greater than or equal to 7.0 millimoles per liter (mmol/L) OR currently taking medication due to diabetes" Page 11, line 5- suggest change to "individuals were more LIKELY TO HAVE hypertension compareD to others who had normal BMI." Table 3- please change thin to underweight to be consistent with the rest of the article Page 16 line 44, suggest change to "HIGHER intake of raw salt..." Page 17, line 14- suggest rewording this sentence

VERSION 2 – AUTHOR RESPONSE

Response to the reviewer #1:

Comment 1: The manuscript improved a lot. Here are some more feedback o consider.

Response: Authors express sincere gratitude to the reviewer for kind appreciation. We have addressed the other concerns of the reviewer in this revised version.

Comment 2: There is a typo in the title: The words would be "predictors" not "Predicators".

Response: Authors are thankful for pointing out this typo in the title. We have corrected the 'typo' in the revised version of the manuscript. (Please see page 1 lines 1).

Comment 3: Figures quality is low, please provide a better quality figure

Response: All figures have been updated now with good resolution according to the suggestion of the reviewer (please see the revised figures).

Comment 3: In the statistical analysis please provide the details of the model selection procedure. How did you come out with the best model that was reported?

Response: Thank you for the important insight on analysis section. For selecting best performing model, at first stage we selected potential variables those have higher correlation with the dependent variable(s), and then performed bi-variate analysis. After that, stepwise multivariable regression models were performed for selecting best models by incorporating variables those were found statistically significant in bivariate analysis. Text regarding best model selection procedure has been incorporated in the statistical analysis part of the methods section in the revised version of the manuscript (please see page 8 lines 239-245).

Comment 4: On page 8 line 37 the authors mention the application of sample weights recommended by BDHS. However, there is no mention of adjusting the clusters (the primary sampling units) and the strata. These adjustments do not alter the coefficients but they do alter the standard errors, usually in opposite directions.

Response: Authors agreed with the reviewer's concern. BDHS usually based on the two-stage stratified cluster sampling technique. That is why BDHS recommended using sampling weight during analysis. Recommended sampling weight actually calculated based on the sampling probabilities separately for each sampling stage and for each cluster. We have modified the text in the revised version of the manuscript. Please see page 9 lines 255-256 in the track changed revised version of the manuscript.

Comment 5: On page 16 line 53-54 the author's reports overweight and obesity were significantly associated with the prevalence of hypertension, diabetes, and comorbidity as potential risk factors. In order to update references on overweight and obesity in the same study population, you can consider the updated literature by Chowdhury MA, BMJ Open. 2018 Jul 1; 8(7):e018468. DOI: 10.1136/bmjopen-2017-018468

Response: Author express sincere apologies for not incorporating updated reference related to same research topic with same study population. As per suggestion of the reviewer, we have added the updated reference in the modified version of the manuscript. (Please see reference no 69 in page 17 in the main text and stated reference 69 in page 22)

Response to the reviewer #3:

Comment 1: I would like to thank the authors for their revisions to the article, which have addressed the concerns outlined in my previous review. There are a few minor changes I wish to recommend, and I also recommend an editorial review of English language prior to publication.

Response: Authors express sincere gratitude to the reviewer for kind appreciation. As per suggestion, the entire manuscript has been proof read by professional English proofreaders (certificate uploaded as a supplementary file). Please see the revised version of the manuscript.

Comment 2: Page 6, line 53- I think you mean "greater than or equal to 7.0 millimoles per liter (mmol/L) OR currently taking medication due to diabetes"

Response: Authors are thankful to the reviewer for point out that important concern. It has been corrected now in the revised version. Please see page 7 line 184.

Comment 3: Page 11, line 5- suggest change to "individuals were more LIKELY TO HAVE hypertension compared to others who had normal BMI."

Response: Suggested change has been incorporated accordingly. Please see page 11 line 300.

Comment 4: Table 3- please change thin to underweight to be consistent with the rest of the article

Response: Authors are thankful to the reviewer for noticing that. The term 'thin' has been replaced by 'underweight' throughout the text. Please see the revised version of the manuscript.

Comment 5: Page 16 line 44, suggest change to "HIGHER intake of raw salt..."

Response: Revised now as per suggestion of the reviewer. Please see page 17 line 428 in the revised version of the manuscript.

Comment 6: Page 17, line 14- suggest rewording this sentence

Response: Authors agreed with the concern of the reviewer. The sentence has been revised now as per suggestion. Please see page 17 lines 435-436.

VERSION 3 – REVIEW

REVIEWER	Muhammad Abdul Baker Chowdhury University of Florida College of Medicine
REVIEW RETURNED	13-Aug-2019

GENERAL COMMENTS	Revisions in the manuscript are responsive to suggestions made by reviewers providing more detail on data sources and methods. The findings and conclusions are unchanged and fulfill the stated purpose of the study.