Author's response to reviews

Title: Association of socioeconomic and behavioral factors with adult mortality: Analysis of data from verbal autopsy in Addis Ababa, Ethiopia.

Authors:

Awoke Misganaw (asterawoke2007@gmail.com)
Damen Haile Mariam (damen_h@hotmail.com)
Tekebash Araya (tekebash@gmail.com)

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Author's response to reviews: see over
Dear BMC Public Health Journal Editors

Please find enclosed revised manuscript entitled “Association of socioeconomic and behavioral factors with causes of mortality: Analysis of data from Verbal Autopsy in Addis Ababa, Ethiopia” to be submitted to BMC Public Health Journal. We have given a point-by-point response to the concerns. All co-authors have seen the comment and provide their feedbacks.

Response to Reviewer’s report

Title: Association of socioeconomic and behavioral factors with causes of death: Analysis of data from Verbal Autopsy in Addis Ababa, Ethiopia.

Responses to the First Reviewer

First of all the authors would like to thank the reviewers for their constructive comments. We have given our response one by one here under with and included in the main document.

Response for the major compulsory comments:

Comment1. Overall, the study addresses a very broad aim in analysing the association of the chosen variables and all underlying causes of death, grouped into broad categories of communicable diseases, non-communicable diseases and injury. It would be more helpful if data were described in relation to the associations between risk factors and more specific categories of diseases.

Response1: We have accepted the comment and excluded the broad categories and included more specific categories such as HIV/AIDS, Tuberculosis, Cardiovascular diseases, malignancy …to see their association with socioeconomic and risk factors and reported only those having associations.

Comment2. Similarly, the authors could provide greater detail in relation to analysis by age group – currently the three categories include a wide range of ages in which the extent of engagement in the risk behaviours measured, and incidence of communicable/ non-communicable diseases, is likely to vary widely. As such, the data described are likely to mask important differences between groups which should be reported.
Response2: We have accepted the comment and provided greater detail on the age group (15-24, 25-44, 45-54, 55-64 & ≥65).

Comment3. It is not clear the extent to which the standardized WHO and INDEPTH network questionnaires were adapted and why this was done; and justification is required for the choice of behaviours and their categorisation; please also provide details of the categorisations themselves e.g. frequency categories.
Response3: We had piloted the verbal autopsy questionnaire first and adapted to local situations translating into the national language (Amharic). The standard questionnaire also includes identification of respondents and care givers, identification of the deceased, death related information, signs and symptoms during illness and risk factor categories. In addition to alcohol and tobacco use, we included khat use due to its local relevance.

Comment4. The categorisation of farmers and those that are self-employed in a separate category to manual labour or professional should be explained. Should these not be moved from ‘other’? A different category should be used as the reference category for these data in Tables 4 and 5.
Response4: We have accepted this comment and we have moved self employed to professional category. But farmers were few in number may be due to the study area is the capital city of the country.

Comment5. Overall, the abstract is a little long and could be shortened so that only the key results are presented- for instance, the proportions drinking frequently, smoking and chewing khat are similar among the entire sample and among those deceased by communicable and non-communicable diseases; this could be made clearer and results summarised. The OR data needs to state the finding in one direction but not both.
Response5: We have accepted this relevant comment and modified our findings as per our current analysis.

Comment6. The introduction would benefit from additional referencing; and there is some repetition in the content which should be removed for greater clarity.
Response6. We have accepted this comment and modified the introduction.

Comment7. The introduction would benefit from a greater focus on the Addis Ababa/ Ethiopia context, for instance in relation to the prevalence and/or patterning of the risk behaviours and diseases examined.
Response7. We have accepted this comment and included recent evidences from Addis Ababa.

Comment8. Please could the authors state how deaths were randomly selected for inclusion?
Response8. After we entered and cleansed the burial data, we use Visual Basic Computer Program to draw 10% randomly for verbal autopsy interview.
Comment 9. Greater detail is needed around the statistical methods - e.g. chi-squared test - please expand the statement relating to selected variables; and note outcomes and variables included in adjusted regression analyses.  
Response 9. We accept this comment and re-write the statistical methods. We have also noted variables used in adjusted regression analyses.

Comment 10. In the discussion, the authors need to include a section specifically relating to the limitations of the study e.g. impact of missing data; and additional sources of bias not mentioned. The impact of the selection bias mentioned should be described; and the repetition of results could be reduced.  
Response 10. We accept also accepted this comment and mentioned this limitations in the methodology and discussion part of the main document.

Comment 11. Greater justification is required for explanations of findings given in the discussion, supported by the literature.  
Response 11. We accept this comment and discussed main findings in relation other literatures

Comment 12. Figure 1: please add labels to all of the columns, report the age range considered in the title, highlight in the legend the variables detailed e.g. ever/ frequent etc, and use the same labels for each behavior.  
Response 12. We found this figure less important to this association paper and excluded from paper.

Comment 13. It would be helpful if the authors could amend Table 2 so that it is clear which behaviour the n numbers refer to, e.g. by including a total in sample label in the left column – does this refer to the total number that answered the question? If just 9% answered a question relating to ‘smoking until they were sick’ it is unlikely that this will provide an accurate measure of that behaviour. In this table, please also note in the Figure/Table legends which measures of behaviours are used; what the p values refer to; and provide n numbers for alcohol as well as tobacco/khat. Lastly, it is not clear why some of the data are highlighted in bold text, please list in the same font for clarity.  
Response 13: We have accepted this comment and amended Table 2.

Comment 14. In Table 3, the measure of each risk behaviour used here needs to be specified – is this ever/ occasional/ frequent? In all tables, sig should be replaced with ‘p’ (and where listed as zeros changed to <0.01 or other as appropriate; and the legend should describe what confounders were included in the multivariable logistic regression. Please amend alcohol users to alcohol use so that all column titles reflect the behaviour rather than the population.  
Response 14: We have accepted this comment and split it in to three (table 3, 4&5). We have included the classification ever/ occasional/ frequent uses and noted variables used in adjusted regression analyses.

Minor essential revisions

Comment 1. It would be helpful if authors could structure the methods such that each aspect is discussed in turn e.g. burial surveillance; VA; risk behaviours.
Response1. We have accepted this comment and structured the methods as per the comment.

Comment2. Justification is required around use of Global Burden of Disease classification rather than ICD-10 codes.
Response2. We assigned ICD-10 for each cause of death during physician review before categorizing the causes of death. We used Global Burden of Disease classification 2006 since it also uses ICD-10 classification. We did the same with our publications such as “Misganaw A, Mariam DH, Araya T. The double mortality burden among adults in Addis Ababa, Ethiopia, 2006-2009. Prev Chronic Dis 2012;9:110142” to have comparable findings with the big categories communicable, non communicable and injuries with burden of disease studies.

Comment3. It would be helpful to describe in greater detail the training and supervision of interviewers e.g. the nature of training; a description of supervision – was this during interviews/ a proportion of interviews?
Response3. We have accepted this comment and described in greater detail.

Comment4. In the results section, for clarity, please amend sentences with two proportions to read e.g. ‘47% of males and 10% of females had...’ rather than ‘males 47% and females 10%..’ There is also some repetition in summary of the results here.
Response4. We have accepted this comment and amended the sentences.

Comment5. Please amend the last sentence in section 2 of the results ‘the deceased who were practicing both alcohol and cigarette smoking were higher 4% than both smoking and khat chewing practitioners 2%’. Perhaps the authors could list the proportions practicing each combination of 2 behaviours?
Response5. We have accepted this comment and amended the sentences.

Comment6. It would be more appropriate if the authors replaced phrases such as ‘x% of deaths were drinking alcohol/ reported drinking alcohol’ to ‘x% of individuals ... were.’
Response6. We have accepted this comment and replaced phrase as required.

Discretionary revisions

Comment1: Descriptive data about the sample could be included in the abstract e.g. n; age range.
Response1: we didn’t do this not to lengthen the abstract.

Comment2. Presentation of data would be clearer with fewer decimal places.
Response2. We accepted and used fewer decimal places.
**Comment3.** It would be of interest for the authors to assess the association of combinations of risk behaviours with the outcomes.

**Response3:** We have accepted this comment and did the analysis. We found almost similar results with individual risk factors and we didn’t include to avoid redundancy and to reduce number of tables.
Responses to the Second Reviewer

Title: Association of socioeconomic and behavioral factors with causes of death: Analysis of data from Verbal Autopsy in Addis Ababa, Ethiopia.

The authors would like to thank the reviewer for the constructive comments. We have given our response one by one here under with and included in the main document.

Response to Major Compulsory Revisions:

Comment1: English should be extensively edited
Response1: We have accepted this comment; and a senior expert (PhD, Professor) has edited the language.

Comment2: Socioeconomic factors are in the title but not in the discussion. Please re-write the discussion according to the title and objectives of the paper
Response2: We have accepted this comment and substantial changes have been made.

Comment3: The authors should prove the validity of their assessment of causes of death through verbal autopsy for each specific cause of death examined. If impossible, just focus on broad causes of death without trying to be that specific.
Response3: We have validated it and got comparable findings with other studies. This validation study has been also submitted to BMC Research Methodology and being considered and a reference in this paper.

Comment4: I find it difficult to imagine how relatives could distinguish between stomach and liver cancer or cervix and uterine cancer, for example
Response4: For clarification, we follow the international standard in our verbal autopsy procedure. We used physician diagnosis causes of death. The role of the relatives or caregivers is to tell about the signs and symptoms during illness. We have already discussed this in the methods section.
Comment 5: The methods section appears after the results section
Response 5: We have accepted the comment and put the method before the result.

Comment 6: I couldn’t understand most of the discussion, will read it again once the English has been edited
Response 6: We have edited the English with a senior expert on the area.

Comment 7: In the tables, the authors present p for significance but what is being examined is not specified
Response 7: We have modified the tables and noted the variables adjusted.

Comment 8: In Tables 4 & 5, the % don’t make up to 100%. If 20% of the participants are male and 22% female, where are the other 60%? The same for all other variables in the table.
Response 8: This is the percentage of males or females among the total who have the risk behaviour and died with the specified cause death.

Comment 9: Have the authors attempted to classify occupation differently? Why the category “other students…” has been selected as reference category? What the category represents? How education in this sample reflect the distribution in the general population?
Response 9: We have accepted this comment: and re-categorized and changed the reference category. Regarding education and other demographic variables, our methodology reflects better representativeness with certain limitations which we have discussed in the methods and discussion sections.

Response to Minor Essential Revisions
Comment 1: In Tables 4 and 5, please present results with 2 decimals only
Response 1: Thank you; we have avoided the decimals to make our data presentation more clear.

Sincerely yours,
Awoke Misganaw, Damen Haile Mariam, Ahmed Ali and Tekebash Araya
Corresponding author: Awoke Misganaw (BSc. MPH) - Addis Ababa Mortality Surveillance Program, Collage of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia
E-mail: asterawoke2007@gmail.com
Cell phone: +251911867007