Reviewer's report

Title: A Prospective Cohort Study of Stroke Mortality and Arsenic in Drinking Water in Bangladeshi Adults

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Reviewer: NAILA KHALIL

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Dear Editor

The article “A Prospective Cohort Study of Stroke Mortality and Arsenic in Drinking Water in Bangladeshi Adults” documents cross prospective association of exposure to arsenic in drinking water with stroke mortality in Bangladeshi adult men and women. This work is important in its field as it adds information regarding cerebro-vascular impact of arsenic consumption especially excess risk of stroke mortality. Although the sample size is remarkable, and with a longitudinal study design, paper is publishable, but only after the following major/minor issues having been addressed:

Major concerns/issues:

- Abstract-
  o Background should briefly describe the known risks of arsenic exposure with cardiovascular disease (what is already known) and then propose to study its effect on stroke mortality (unknown) for example “arsenic in drinking water causes increased coronary artery disease (CAD) and death from CAD, but its association with stroke is not known”

  o Methods: describe that based on arsenic concentration the population was categorized in three groups:---- and stroke mortality HR was compared to the referent. If <10 is being compared with two strata of 10-49, and >=50 then why are results only presented for <10, and >=10?

  o It will be informative to present overall HR in the three strata first and then present sex-related results.

  o Describe that HR and 95% Confidence Interval was calculated, present the HR and 95% CI overall, for men, for women, then describe the person year overall, for men, and for women, and then describe the test of trend, overall, for men and women.

  o Test of trend is only valid if more than two groups are being compared.

  o For women HR is not presented, and only the person-year mortality rate is given.

  o Conclusion: The first half of first sentence is repetitive of the results. Start from “The results suggests that arsenic exposure is associated with increased risk in this population------
• Introduction-
  o Second paragraph—write a sentence about black foot disease to make it clear to
the reader what is meant by “among black foot disease—-.:
  o Occupational arsenic exposure has also been implicated in—to what?
• Methods
  o Study area and design
    # The study time period is not clear.
    # The study population and enrollment inclusion and exclusions can be
presented as a flow chart—to make it clearer.
    # What was include in demographic information—describe the ascertainment of
those variables
    # Describe the socioeconomic status and its categories, age categories, and
education categories—as presented in table 1.
  o Other study variables
    # The last sentence in this paragraph “Other socioeconomic factors include—-age
at baseline and sex and years of education—age and sex are socioeconomic
factors?
    # Describe the justification for table 2—was any statistical test performed to
compare those included versus those lost to follow up?
• Statistical Analysis
  o Baseline exposure was divided in four groups? Results are presented with two
groups?
• Results and discussion
  o ICD coding can be moved to methods
  o Results from Table 2 can be described first very briefly—that those included
  o How was mean difference between age and mean arsenic well water tested—if
test or Mann Whitney test was used, it should be described in statistical
analysis.
  o Present the HR and 95% CI overall in the two categories (10-49, and >50)
compared to the referent. Then separately for men, for women, and then
describe the person year overall, for men, and for women, and then describe the
test of trend, overall, for men and women.
  # Discussion
  o This section is not separate
  o Second paragraph should be removed—all repetition
  o Actual third paragraph—describe association between folate and CVD
  o Sixth paragraph—last sentence—which cohort?
  # Table 1
What does chi-square present on the fourth row of the table?
Label the population “n” and %
What are last three columns?

# Figures
Y-axis scale needs to be uniform for all three panels—it starts at 0.994, 0.996, and 0.995 in 1A, B, C, respectively

Minor concerns/issues:
- ICDDR-B—define acronym
- Font varies on different lines of title page, and in tables.
- Abstract and in text throughout the paper: put a comma before the thousand number: for example 61,074
- Verbal autopsy and WHO acronyms defined later than their first use in text

Thank you for the opportunity to review this paper. If the paper is revised and resubmitted, I will be interested to read it again.

Sincerely,

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Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests