Reviewer's report

Title: Caste-based social inequalities and childhood anemia in India: Results from the National Family Health Survey (NFHS) 2005-2006

Version: 3  Date: 26 March 2015

Reviewer: Malavika Subramanyam

Reviewer's report:

Major compulsory revisions

1. Please describe how this study adds to knowledge beyond what has been described in Nayar KR. Social exclusion, caste & health: a review based on the social determinants framework. Indian J Med Res. 2007 Oct;126(4):355-63.

2. "Although a few studies has highlighted higher prevalence of childhood anemia in disadvantageous castes in India [10-14] studies neither explored the independent association of caste with anemia nor accounted for factors like adult education and household wealth."

   Here, it is unclear exactly what is meant by “independent association” other than the statistical meaning (association accounting for/independent of other covariates). Please elaborate.

3. Introduction needs to make a case for exploring caste-based disparities in anemia in theoretical terms. What are the reasons that compel us to look at caste? How might the results of this study inform programming or policy-making? Why is it important to study the effect modifying role of education and wealth? What new knowledge will this add?

   The next few comments relate to the Methods section

4. Please list the variables referred to as “other children/maternal/household covariates” in this sentence: “We excluded the 76 children with missing information on anemia levels (n=6,277), caste (n=1,973), adult education (n=154), and other children/maternal/household covariates (n=1,937), leaving a 78 sample of 33,488 children for final analysis.”

5. “Information on adult education was obtained from both parents.” Were there two variables then, maternal and paternal education? This needs to be clear in the methods section.

6. “Household characteristics were weighted according to a factor analysis procedure. Households were allocated a final household wealth score calculated from the summation of weights for each item into a linear index.” Did the authors perform these procedures? Or did they use the wealth score provided with the NFHS-3 dataset (which has been created using the procedure they describe)? This needs to be clarified.
7. How was the maternal education variable operationalized?

8. What are the reasons for classifying the paternal education variable as a household-level covariate?

9. The section on “Other covariates” needs to include more details how each covariate was defined/operationalized.

Discussion

10. I did not understand this sentence, “The association was stronger for children with severe level of anemia in lower caste.”

11. “As also seen in our data, the child bearing mothers in disadvantaged castes were more likely to be smokers.” Is this finding independent of household wealth in your study? What about in the study that you quote?

12. “Similarly, highly prevalent maternal poor eating habits, unsafe working environment and noncompliance with use of iron supplements in disadvantaged castes can potentially mediate the association between caste and childhood anemia.” How might these pathways operate independent of the impact of household wealth? Please describe theory-based reasons.

13. “As our results suggested that there is a higher risk of anemia in disadvantaged caste, public health approaches tailored to disadvantaged castes might be more beneficial in countering childhood anemia in India.” Is it not possible to come to these conclusions from the NFHS-3 report? How has your study added to our knowledge beyond what is shown in the NFHS-3 report?

Minor essential revisions

Abstract:

1. Recommend replacing "exposes to social inequalities and affects the health adversely." with "exposes one to social inequalities and affects health adversely."

2. Recommend replacing "Similarly, sensitivity analyses for children born to mothers of age # 18 years at first child birth and body mass index (BMI) # 18.5 kg/m2 20 , resulted in similar 21 findings." with "Sensitivity analyses for children born to mothers of age # 18 years at first child birth and body mass index (BMI) # 18.5 kg/m2 20 , resulted in similar 21 findings."

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.