Concern on prevalence of anaemia in pregnant & lactating women in India

Sir,

Agarwal et al\(^1\) in their article published in August 2006 issue of IJMR compared the prevalence of anaemia as measured by the HemoCue method in the 1998-1999 National Family Health Survey (NFHS-2) with anaemia estimates in the same enumeration areas in seven states using the indirect cyanmethaemoglobin laboratory method [using dried blood spots (DBS) on filter paper]. They found that the prevalence of anaemia was substantially higher in their study than in NFHS-2. The authors suggest that the HemoCue underestimates anaemia prevalence in pregnant and lactating women. However, many scientific studies have found the HemoCue analyzer to give accurate results, comparable to estimates from more sophisticated laboratory instruments\(^2\)-\(^7\). The improved HemoCue Hb 201+ analyzer used in NFHS-3 has been validated against major automatic cell counters, and has been found to agree well with all tested systems\(^8\).

In contrast, the validity of the indirect cyanmethaemoglobin method has been called into question. Sari et al\(^9\) found that the HemoCue method was appropriate for use in surveys covering large areas, but that the indirect cyanmethaemoglobin method (using DBS) was found to seriously overestimate anaemia compared to the direct cyanmethaemoglobin method (the gold standard using whole blood). For that reason, the authors stated that the indirect cyanmethaemoglobin method is unacceptable for anaemia estimation. If this is the case, then the difference between the NFHS-2 anaemia estimates and the estimates by Agarwal et al\(^1\) may well be caused by overestimation in the Agarwal et al\(^1\) study rather than underestimation in NFHS-2. In fact, one of the articles that Agarwal et al cite as indicating that NFHS-2 anaemia estimates are too low\(^10\) concludes that it is difficult to decide whether the cyanmethaemoglobin method yields estimates that are too high or the HemoCue yields estimates that are too low. It is notable that the authors\(^1\) have not cited any studies that have validated the indirect cyanmethaemoglobin method for anaemia testing.

In addition, there are a number of reasons why the Agarwal et al\(^1\) estimates should not be directly compared with the NFHS-2 anaemia estimates. First, their study took place three years after NFHS-2. The higher anaemia prevalence may reflect actual increases in anaemia during that period. Provisional results from the NFHS-3 survey\(^11\) show that there was a substantial increase in anaemia prevalence among pregnant women between NFHS-2 and NFHS-3 in many States at the same time that the percentage of women taking iron and folic acid tablets during pregnancy was declining. Second, Agarwal et al\(^1\) compared their rural estimates in selected villages
with the estimates for each State that included both rural and urban areas. The most appropriate comparison would have been with estimates for the same villages or, at a minimum, with the overall rural estimates from NFHS-2. Third, the definition of lactating women is not comparable in the two surveys. In the NFHS-2, a lactating woman is defined as any non-pregnant woman who is breastfeeding a child. In their own survey, Agarwal et al included only women up to three months postpartum who are exclusively breastfeeding a child. We recalculated anaemia prevalence in NFHS-2 based only on women up to three months postpartum who were exclusively breastfeeding a child and found much higher prevalence of anaemia for this group than for the NFHS-2 group shown in Table III of Agarwal et al (an increase of 7 percentage points on average across the seven States, with a maximum increase of 17 percentage points in Haryana). Finally, there is a difference between the two surveys in the determination of which drop of blood was used for the anaemia tests.

The variation in the anaemia estimates emerging from different surveys and methodologies should not undermine the important policy and programme implications of these studies. The fact that every survey finds the prevalence of anaemia to be unacceptably high for both women and young children suggests that there is a critical need to rapidly expand efforts to prevent and treat anaemia in India.

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References


Authors' response

Sir,

With reference to the queries raised by Gupta et al on our article entitled “Prevalence of anaemia in pregnant and lactating women in India”. We would like to submit the following:

The technique indirect cyanmethaemoglobin method has been used earlier in various national anaemia surveys (DLHS, ICMR, NNMB). The technique has been well tested by the National Institute of Nutrition, Hyderabad. Thus, it was logical to use the same technique to evaluate the impact of the measures to control anaemia by the government and NGOs. Therefore, we used the indirect cyanmethaemoglobin method (for earlier ICMR surveys see the references in the article). The HemoCue technique is an excellent method for rapid haemoglobin estimation in the field, particularly in India. But haemoglobin estimation by this technique differs at all levels as compared to the cyanmethaemoglobin method. Thus use of this method in NFHS-2 was not justified.

As stated by Gupta et al, the improved HemoCue analyzer has been used now and as a result the prevalence of anaemia in NFHS-3 was found to be significantly higher. Does it not mean that the earlier HemoCue method was not accurate?

Definition of lactating women covers exclusively breast-fed. Yes, it is different but provides insight that exclusive breastfeeding women are significantly anaemic. Surely the recalculation of NFHS-2 data for this physiological period also got higher prevalence.

We are not to comment on the techniques best or better; the point is to compare the impact of health and nutritional inputs. If HemoCue technique has been used to compare NFHS-2 vs NFHS-3; but method is altered or improved, this possibly can change the level of haemoglobin significantly!

We endorse the statement - “The variation in the anaemia estimates emerging from different surveys and methodologies should not undermine the important policy and programme implications of these studies. The fact that every survey finds the prevalence of anaemia to be unacceptably high for both women and young children suggests that there is a critical need to rapidly expand efforts to prevent and treat anaemia in India”.

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