Maternal Haemoglobin and Birth Weight

Dear Editor,

I read with interest the article on maternal haemoglobin and birth weight in the April 2001 issue of the journal [1]. I request a few clarifications from the authors to help me understand the study better :

(a) Type of study : The study cannot be "cross-sectional" and "prospective" at the same time since the first type of study investigates subjects on one occasion only whereas in the second type, subjects are followed forward in time [2].

(b) Study population : It is said to be a "stratified random study". The following need clarification :-

- (i) Randomization is only applicable to interventional studies; this was an observational one;
- (ii) If this study was of the cohort type where pregnant women were observed for their haemoglobin (Hb) levels forward in time and the outcome of interest was birth weight, then the authors have sub-divided the cohort based on socio-economic status at the outset. This is an accepted procedure but does not amount to "stratified randomization" [2];
- (iii) If what the authors wanted to convey, was that the 1000 study subjects were randomly selected from the entire population of available pregnant women then the total number of pregnant women who were eligible for enrolment in the study and the method employed for random selection should have been mentioned;
- (iv) The study subjects were not stratified based on the inclusion/exclusion criteria as stated in Material and Methods. They were stratified based on their socio-economic status;
- (v) Did all the 1000 pregnant women go on to deliver live infants?

Were there no still births in this cohort? The number of infants born to these 1000 women is not mentioned anywhere!

Clarification on the above is important because of the mothers of 1000 liveborn infants were interviewed and their records studied, then this becomes a retrospective case-control study.

(c) Multiple pregnancy, inter-pregnancy interval and chronic

malaria are known to influence birth weight but find no mention in the inclusion / exclusion criteria.

(d) The second objective of the study was to analyze if maternal anaemia influences fetal outcome in terms of birth weight. The following need clarification :

- (i) The authors have not defined criteria used in this study for the diagnosis of anaemia;
- (ii) No correlation between "anaemia" and birth weight has been presented in the results section (correlation between haemoglobin and birth weight is the first objective of this study and not the same as the above)
- (iii) From the author's declaration of 51.4% prevalence of anaemia in this study and Figure 1, it is deduced that a maternal Hb value <11.0 gm/dL was taken as anaemia. How was this figure selected? Was a single value below 11.0 taken to denote anaemia?
- (iv) Since minor differences of Hb are significant in this study, was the method of Hb estimation in the two hospitals same and standardized?
- (e) Conducting a study of this magnitude is not at all easy and the authors deserve kudos for the effort. This study could also have been utilised to look into the relationships between:
 - (i) Duration of maternal anaemia and birth weight;
 - (ii) Trimester-wise timing of maternal anaemia and birth weight; and,
 - (iii) Morphology of anaemia and birth weight.

References

1. Raghuraman TS, Parimala V, Bhalla M, Venkateshwar V, Iyengar A. A correlative study of maternal haemoglobin and birth weight. *MJAFI* 2001;57:110-3.
2. Altman DG. In : Practical statistics for medical research. London, Chapman and Hall 1991;91-2.

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Reply

A Correlative study of Maternal Haemoglobin and Birth Weight

Dear Editor,

We welcome the valuable comments on the article 'A Correlative Study of Maternal Haemoglobin and Birth Weight' [1]. We would like to respond to the comments as under:

a. In our study 500 consecutive pregnant mothers who satisfied the inclusion and exclusion criteria and resulted in live births (as primary outcome of interest was birth weight) were included from each of the two centres. By 'cross sectional population' it was meant to indicate that a cross section of pregnant woman fulfilling the eligibility criteria were followed prospectively till

the time of livebirth. It was not a cross sectional study in the sense (as implied in the letter to editor) that a single evaluation of a cross section of pregnant women was carried out only once.

b. (i) We agree that randomization is a statistical procedure used in interventional study for eliminating bias by ensuring that investigator has no control over allocation of participants to study and control group. In the present study there was no control group. Selecting consecutive pregnant women fulfilling predefined eligibility criteria amounted to a random selection and eliminated any bias in selection of patients.

(ii) There was no stratified randomization in the study. The women were stratified at the time of analysis in to various groups based on the socioeconomic status to determine the influence of socioeconomic status on haemoglobin levels and birth weight.

(iii) As explained above, it was a prospective study of pregnant mothers who went on to deliver a live baby and not a case control study.

c. A medical illness in mother constituted an exclusion criterion. We agree that multiple pregnancy and shorter interpregnancy interval (< 2 years) are also known to influence the birth weight.

d. Haemoglobin estimation was done by cyanmeth haemoglobin method, a standardised method for haemoglobin estimation, in both the hospitals. The primary objective of the study was to see the correlation between maternal haemoglobin levels and birth

weight in different socioeconomic groups and not maternal anaemia and birthweight. A haemoglobin value of less than 11 gm/dl at any time during gestation was labelled as anaemia. This study showed a significant inverse relationship of maternal haemoglobin concentration to birth weight, in agreement with the hypothesis that a higher blood viscosity with rising haemoglobin levels is responsible for sub optimal placental perfusion and decreased delivery of nutrients to the foetus

Reference

1. RaghuRaman TS, Parimala V, Bhalla M, Venkateshwar V, Iyengar A. A correlative study of maternal haemoglobin and birth weight. *MJAFI* 2001; 57:110-3.

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Aerosol Antisepsis

Dear Editor,

This refers to the article "Aerosol antisepsis : an effective and user-friendly method of skin preparation." published in *MJAFI* [1]. We continue to use this method, successfully for preoperative skin preparation, at the same hospital where it was originally introduced. During the last two years we have faced the following difficulties and have tried to overcome them :

(a) The nozzle of the spray pump containing povidone iodine gets blocked and the quality of the spray is unsatisfactory. Weekly cleaning of the nozzle helps in overcoming this difficulty.

(b) Some patients have a bout of cough after povidone iodine is sprayed on the operative field. This is probably due to the inhalation of povidone iodine. Changing the direction of the spray, away from the patient's face and placing a screen before spraying reduces this problem considerably.

(c) In winter, spraying cold solution causes discomfort to the patients. Placing the spray pump in a hot water bath eliminates this problem.

An aerosol is defined as a suspension of extremely small liquid or solid particles in the air-diameter about 0.001 mm. (2) Would it not be proper to refer to this method as antiseptic spray? The above mentioned difficulties are minor and can be easily overcome. On the whole this method of skin preparation is simple, effective, economical and user friendly. We have been using it for the last four years and recommend it's use in all operation theatres.

References

1. Mehrotra S, Bhot FB, Hemraj. Aerosol antisepsis : an effective and user friendly method of skin preparation. *MJAFI* 2002;58:95.
2. Harrison LM. The pocket medical dictionary. CBS publishers 1986.

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Military Environment nad Fecundity : A Study of Women in Uniform

Dear Editor

Reference contemporary issue "Military Environment and Fecundity : A study of women in uniform" by Lt Col Rath et al, published in *MJAFI* 2002;58(1):44-6.

It is often worth considering the selective factors that may have led to "membership" in a particular group (or exclusion from it) especially if health status (in this case fertility) may have played a role. This has been called membership bias [1-3]. Since having children may keep women from work, working women may be relatively infertile. This has been termed the "infertile worker effect" [4]. Because of this selection bias one is not sure whether occupation outside home led to infertility or infertility led women to seek job outside home i.e. the direction of the cause - effect relationship (if any).

References

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3. Abramson JH, Abramson ZH. *Survey methods in Community Medicine*. 5th ed. Churchill Livingstone; 1999:69-78.
4. Joffe M. Biases in research in reproduction and women's work. *International Journal of Epidemiology*; 1985;24:1154.

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