

Use of the Mentzer index will assist in early diagnosis of iron deficiency in South African children

To the Editor: A recent review article by Dr R Thejpal^[1] in CME provided a comprehensive update on the diagnosis, treatment and challenges of early diagnosis of iron deficiency in South African (SA) children. Although several definitive laboratory tests are readily available in SA National Health Laboratory Service (NHLS) laboratories for diagnosing iron deficiency in both children and adults, laboratory testing is expensive and, as noted previously, regions with a high prevalence of anaemia also have a large burden of infectious diseases^[2] that invariably become the laboratory priority in resource-constrained settings.

This scenario is not limited to our local environment. Articles from India and Turkey describe similar diagnostic challenges and possible approaches for more cost-effective screening of iron deficiency anaemia. The first study, by Sazawal *et al.*,^[2] included 2 091 children from an impoverished population in Delhi. This study used two haematological indices, namely haemoglobin concentration ≤ 10 g/dL and red cell distribution width (RDW) $>15\%$, to identify iron-deficient children between 1 and 3 years of age (confirmed by zinc protoporphyrin and serum ferritin assays). Statistical analysis confirmed a sensitivity of 99% and specificity of 90% if haemoglobin and RDW alone were used for screening.^[2] The second study,^[3] from Turkey, assessed 290 children aged 1 - 16 years and used the red blood cell count, RDW and Mentzer index (mean corpuscular volume/red blood cell count ratio) to differentiate beta-thalassaemia trait from iron deficiency anaemia. These results indicated that the Mentzer index was the most reliable indicator, with a sensitivity of 98.7% and specificity of 82.3%.^[3] In our recently reported limited assessment of 381 'clinically' healthy children between infancy and 12 years of age from a semi-informal settlement in Cape Town, SA, we used a similar screening approach of haemoglobin concentration, RDW and calculated Mentzer index. In this study we were able to show that 14.2% (54/381) of the children who had a full blood count performed during routine testing could have possible iron deficiency anaemia.^[4]

Although these screening approaches have only been assessed on participants or patients with physiological anaemia (decreased haemoglobin concentration), the excellent sensitivities and specificities reported suggest that these screening methods could also be applied to identify subclinical iron deficiency anaemia. Although further studies are indicated to test this hypothesis, we propose that in the interim all full blood count results reported should include the Mentzer index. With no attached additional cost, the RDW result and the Mentzer index could provide an immediate screening tool that can be accompanied with an interpretive comment to assist local clinicians in identifying children with possible subclinical or latent iron deficiency.

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Correction

In the article 'The South African Surgical Outcomes Study: A 7-day prospective observational cohort study' by Biccard *et al.*, which appeared on pp. 465 - 475 of the June 2015 *SAMJ*, there was an error in the 'Conflict of interest' section: R Machekano and not R Moreno received payment for statistical analyses for SASOS from SASOS grant funds for the submitted work. In Appendix 3, T Kisten was omitted as a SASOS investigator for Inkosi Albert Luthuli Central Hospital, KwaZulu-Natal Province. The online version of the article (<http://dx.doi.org/10.7196/SAMJ.9435>) was corrected on 31 August 2015.