Comment

HCS, an affordable instrument to assess haemoglobin

Anaemia is a leading cause of maternal deaths and adverse pregnancy outcomes in low-income and middle-income countries. Overall, 12% of low birthweight, 19% of preterm births, and 18% of perinatal mortality are attributable to maternal anaemia.[1] The prevention and timely management of anaemia is therefore essential to attain Sustainable Development Goal (SDG) 3 on ensuring healthy lives and promoting wellbeing.

Accurate measurement of haemoglobin allows the identification and treatment of individuals with anaemia, controlling the severe consequences of this condition. Unfortunately, in the peripheral health services of low-income countries, where the capacity to identify individuals with anaemia is most needed, haemoglobin is usually assessed only by clinical examination (ie, assessment of conjunctival and palmar pallor), an approach requiring a long training time and vast clinical experience to be fairly accurate.[2]

Ideally, to be deployed in low-income and middle-income countries, a method to assess haemoglobin concentration should be reliable, low cost, and easy to use. To respond to this need, the Haemoglobin Colour Scale (HCS)[3] was developed and its performance evaluated in several settings with encouraging results.[3-6] Its use was promoted by the WHO as a low-cost, good performance, and simple-to-use method, yet its use in low-income and middle-income countries has not been at the expected levels: since its marketing in 2001, only about 90 000 scales have been sold (Willun A, Copack FH & Co, personal communication).

The systematic review by Heiko Marn and Julia Critchley in The Lancet Global Health[7] provides an exhaustive summary of the current literature on the accuracy of the HCS in comparison with clinical diagnosis; the review concludes that the wide introduction of the HCS could reduce the number of patients missing the right diagnosis of anaemia by 20%.

Additionally, this review contains an interesting novelty. Taking advantage of the fact that most of the included HCS evaluations compared the results of this method with the ones obtained by clinical evaluation (palmar or conjunctival pallor), Marn and Critchley were able to assess the potential performances of the combined use of the two methods and conclude that this approach could further greatly reduce the number of patients with a missed diagnosis of anaemia.

Marn and Critchley also identified one of the limitations of the HCS, noting that the training protocols have not been updated in several years. It is likely that, in addition to revising the thresholds of anaemia and its determinants, addressing this point will enable better results and a more standardised use of the instrument.

The results of this review conclude that, 15 years after its development, the HCS is an accurate, simple-to-use, and affordable point-of-care device to quantitatively assess haemoglobin. We hope that the confirmation provided by Marn and Critcheery that, 15 years after his development, the HCS remains the most simple to use and affordable device to assess the haemoglobin, could further promote its use.

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1 Rahman MM, Abe SK, Rahman MS, et al. Maternal anemia and risk of adverse birth and health outcomes in low- and middle-income countries: systematic review and meta-analysis. Am J Clin Nutr 2016; published Jan 6. cn107896.

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4 Van den Broek NR, Ntonya C, Mhango E, White SA. Diagnosing anaemia in pregnancy in rural clinics: assessing the potential of the Haemoglobin Colour Scale. Bull World Health Organ 1999; 77: 15–21.

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7 Marn H, Critchley JA. Accuracy of the WHO Haemoglobin Colour Scale for the diagnosis of anaemia in primary health care settings in low-income countries: a systematic review and meta-analysis. Lancet Glob Health 2016; published online Feb 18. http://dx.doi.org/10.1016/S2214-109X(16)00005-X.