Accuracy of portable Haemoglobin Analyzer HemoCue301 in Women of Reproductive Age in a Deprived Region of Northern Peru

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Background: Anaemia continues being the main public health concern in Peru. In some areas rates surpass 70% for some vulnerable demographics. Nevertheless, recent evidence shows heavy inequalities in terms of diagnosis especially in most deprived settings where only point of care devices are available.

Methods. Adult women were recruited in Tumbes using HemoCue 301. A total of 306 women took part of the study, venous blood samples were taken and analysed with an automated haematology analyser as gold standard. Serum samples were used to measure ferritin, serum iron and C reactive protein.

Results. The Hemocue 301 has a clinically relevant bias of 0.36 ± 0.93 g/dL respect to the automated Hb. 40% of women with normal ferritin values were classified as anaemics according to the HemoCue 301. Compared to ferritin measurements, the performance of automated Hb values is higher [AUC 0.82 (0.77-0.88) vs 0.71 (0.62-0.79), $p < 0.001$]. Automated Hb had a specificity of 0.817 and a sensitivity 0.711 while with the HemoCue 301 had a specificity of 0.697 and a sensitivity 0.688.

Conclusion. Caution must be taken when using POC devices, especially with values around the threshold and in deprived places where there are no means for further confirmatory tests. Clinical outcomes should be prioritized when diagnosing iron deficiency anaemia in women of reproductive age to ensure proper diagnosis and avoid conditions resulting of excessive iron overload.