

Efficacy of noninvasive hemoglobin measurement by pulse co-oximetry in neonates.
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Journal of Clinical Neonatology, vol. 9, no. 1, 2020, p. 57. Accessed 10 Aug. 2020.

Background: Hemoglobin (Hb) measurement is one of the most commonly performed laboratory tests in neonates. The advent of new technologies enables us to carry out noninvasive Hb measurement, without having to prick the neonate, whereby reducing iatrogenic blood loss. There have been only few studies trying to ascertain the relationship between noninvasive Hb and conventional Hb in neonates. Against this background, this study was undertaken to evaluate the efficacy of noninvasive spectrophotometric Hb (SpHb) measurement by the pulse co-oximetry in neonates in comparison to laboratory Hb (Lab-Hb) and to study the influence of factors such as level of Hb and serum bilirubin on same.

Materials and Methods: A cross-sectional study was carried out in the postnatal ward and neonatal intensive care unit of a tertiary hospital in Southern India. Hemodynamically stable admitted neonates ($n = 100$) had their SpHb estimation done using the Masimo Radical-7 Pulse Co-oximeter at the time they were being sampled for Hb. The paired data was then analyzed for the relationship between SpHb and Lab-Hb. **Results:** The mean \pm standard deviation g/dL for Lab-Hb and SpHb was 16.21 ± 1.92 and 15.45 ± 1.28 , respectively. There was a reasonable positive correlation between Lab-Hb and SpHb. (Pearson correlation: $R = 0.714$; $P < 0.001$). Bland–Altman analysis between Lab-Hb and SpHb revealed a bias (precision) to be 0.763 (1.349). The best agreement with respect to Hb levels was noticed in the Lab-Hb range of 12–18 g/dl and there was no significant influence of hyperbilirubinemia on the results. **Conclusion:** SpHb by the pulse co-oximetry is an efficacious method of assessing Hb trend among neonates.