

# Lower Mean Blood Hemoglobin Concentrations Within Black Subpopulations: A Historical Literature Review

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## ABSTRACT

For 7 decades, the mean blood hemoglobin (Hb) concentration in Black populations of every age and sex stratification has been reported to be 0.5–1.0 g/dL lower than in other races. This literature review examines 23 studies from 1946–2016 reporting lower Hb levels within Black subpopulations and potential etiological mechanisms. Study data consistently report lower Hb levels in Black subpopulations, but with variable magnitudes. In Black children, Hb levels were reported as 0.5, 0.64, and 0.73 g/dL lower; in Black adults, Hb levels were reportedly lower by 0.7, 0.98, and 1.0 g/dL compared with White counterparts. These findings were independent of age, sex, and socioeconomic factors or hematopoietic nutrient levels. Researchers proposed that all-age Black individuals have a lower lifelong *physiological* Hb level than other races and proposed a correction factor to modify the universal

World Health Organization (WHO) Hb-level threshold diagnostic criteria for anemia in Black individuals of all ages by 0.5–1.0 g/dL. Studies addressing the call for a correction factor to the WHO HGB-level anemia diagnostic criteria based on race have been evaluated to determine the reasons why the proposed correction factor, based on race, has not been adopted to date. These include a lack of consensus, variations in the reported Hb concentration differences, and the high incidence of hereditary anemias (including  $\alpha$ -thalassemia trait) within the Black population as well as a call for controlled experimental studies to determine population-specific reference ranges and appropriate Hb level diagnostic criteria by race and laboratory testing protocols to differentiate physiologic from pathophysiologic Hb levels in Black individuals.

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