

Large-scale Retrospective Analyses of the Effect of Iron Deficiency Anemia on Hemoglobin A1c Levels

Background

- Measurement of hemoglobin A1c (HbA1c) can be valuable in the diagnosis of type 2 diabetes and prediabetes, as well as for monitoring glycemic control in patients with diabetes.¹
- Because HbA1c is present on red blood cells (RBCs), conditions that affect RBC turnover could affect circulating HbA1c levels. One such prevalent condition is iron deficiency anemia (IDA).²
- Studies with small sample sizes have yielded conflicting results on whether IDA affects HbA1c levels.²
- **Objective:** To better understand the association of IDA with HbA1c levels, investigators retrospectively analyzed results for HbA1c and markers of IDA among patients tested at a large clinical reference laboratory.

Methods

- Test results from patients tested for both HbA1c and markers relevant to IDA at Quest Diagnostics from 2015 and 2019 were included in the analysis.
- IDA was defined as the presence of (1) serum iron, ferritin, or transferrin iron saturation below age-based reference ranges; and (2) transferrin iron-binding capacity or transferrin levels above age-based reference ranges.
- Median HbA1c levels were compared for patients with and without IDA using the Kruskal-Wallis statistical method. Because reference ranges depend on sex, the data were stratified by sex.

Results

- Over 12,000 patients with IDA and over 21,000 patients without IDA met inclusion criteria.
- The median HbA1c level was higher in patients with IDA than in those without, regardless of sex ($P < 0.001$):
 - **Females**
 - With IDA: 5.7% among 9,346 patients
 - Without IDA: 5.4% among 13,448 patients
 - **Males**
 - With IDA: 6.0% among 3,084 patients
 - Without IDA: 5.6% among 7,992 patients

Conclusions

- The findings of this study show that female and male patients with IDA have higher median circulating HbA1c levels than patients without IDA.
- A patient's IDA status should be considered before making clinical management decisions for monitoring diabetes, especially given the high prevalence of IDA.

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Webpage

<https://meeting.aacc.org/abstracts/annual-meeting-abstract-archive>

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