ENDOCRINOLOGY RESEARCH AND PRACTICE

SOCIETY OF ENDOCRINOLOGY AND METABOLISM OF TURKEY

In the Case of HbA1c Variability, Could Predicted HbA1c Be An Alternative?

LETTER TO THE EDITOR

Endocrinol Res Pract. 2025;29(1):77-78

I read with great interest the article published by Dutta et al[1] in the latest issue of your journal, in which researchers aimed to investigate the impact of iron deficiency anemia (IDA) on HbA1c levels in nondiabetic individuals and to explore the correlation of HbA1c with hemoglobin, parameters of the iron profile, and red blood cell indices.

Although HbA1c is the gold standard for measuring and monitoring glycemic control, it may vary in some comorbidities, leading to misinterpretation of HbA1c and errors in clinical decision-making. For example, the presence of IDA increases the HbA1c level toward the prediabetic or diabetic range in euglycemic individuals.[1]

The authors suggested that decisions regarding HbA1c should be made after treatment of IDA or other comorbidities that contribute to HbA1c variation. However, in daily clinical practice, it may not be possible to follow up on each patient regularly due to patient density in some countries. Even the researchers of the aforementioned study[1] could not provide data after iron replacement, and it is possible that the patients' IDA was not treated. In addition, since oral iron therapy takes a long time and intravenous therapy is expensive, the mentioned strategy may not be feasible. On the other hand, iron therapy itself may cause falsely low HbA1c levels because it increases red cell turnover.[2,3] Thus, the possible value of HbA1c remains confidential and complex in clinical decision-making.

Although the best-recommended measures for glycemic control in cases of HbA1c variability are regular capillary glucose measurements and the simultaneous use of continuous glucose monitoring,[2] could predicting HbA1c be an another alternative?

Predicted HbA1c is easily calculated via a validated linear regression equation using fasting plasma glucose(FPG): predicted HbA1c = constant + (b1*FPG) + random error.[4,5] In the equation "constant and b1" are regression coefficients, FPG is the independent variable, and random error is the variability in the dependent variable that cannot be explained by the independent variable. It is assumed to result from unobserved factors or inherent randomness in the data. Random error is typically assumed to be normally distributed with a mean of zero. A constant variable represents the dependent variable when the independent variable is 0, and b1 is the value that shows how much the dependent variable can change if the independent variable increases or decreases by 1 unit. It is worth noting that the mentioned formula has been confirmed in the literature.[5]

Availability of Data and Materials: The data that support the findings of this study are available on request from the corresponding author.

Peer-review: Externally peer reviewed.

Author Contributions: Concept – A.N.; Design – A.N.; Supervision – A.N.; Resources – A.N.; Materials – A.N.; Data Collection and/or Processing – A.N.; Analysis and/or Interpretation – A.N.; Literature Search – A.N.; Writing – A.N.; Critical Review – A.N.

Declaration of Interests: The author has no conflicts of interest to declare.

Funding: This study received no funding.

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Received: October 5, 2024
Revision Requested: October 11, 2024
Last Revision Received: October 12, 2024
Accepted: October 22, 2024
Publication Date: January 2, 2025

Cite this article as: Naser A. In the case of HbA1c variability, could predicted HbA1c be an alternative? *Endocrinol Res Pract.* 2025;29(1):77-78.

DOI: 10.5152/erp.2025.24567

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