World Nutrition Journal |eISSN 2580-7013

SUPPLEMENT

Innovative ways to screen for iron deficiency anemia (IDA)

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Received 19 September 2025
Accepted 22 September 2025
Published 29 September 2025

Link to DOI:
10.25220/WNJ.V09.S1.0003

Citation: Chandra, DN. Innovative ways to screen for iron deficiency anemia (IDA). World Nutrition Journal.2025 September 29,9(S1): 4.

Abstract

Iron deficiency anemia (IDA) poses a significant public health challenge in Indonesia, contributing to 75% of anemia cases among pregnant women and 42% among children under five years. Clinical diagnosis typically relies on biomarker evaluation, including hemoglobin levels, serum iron concentration, and transferrin saturation. While diagnostic protocols emphasize specificity, population-level screening efforts prioritize sensitivity to effectively identify at-risk individuals.

International and national guidelines advocate ferritin-based screening, often integrated with complete blood counts, particularly during pregnancy. Strategies encompass minimally and non-invasive methods was preferred by the community, each presenting trade-offs regarding diagnostic accuracy, feasibility, and resource allocation. Accurate identification is critical, as misdiagnosis may result in either untreated anemia or unwarranted interventions.

Recent innovations in IDA screening incorporate machine learning and digital assessment tools aimed at recognizing hematological patterns and evaluating dietary and clinical risk factors. Among these, the *Kalkulator Zat Besi* represents a context-specific, questionnaire-based tool designed for children, pregnant women, and breastfeeding mothers. By translating intake and health history into actionable risk assessments, this tool fosters early detection and nutritional awareness. Despite the limitations of subjective screening methods, combining such digital tools with objective laboratory diagnostics holds promise for strengthening anemia management strategies at both clinical and population levels

Keywords: anemia, innovation tools, iron deficiency, screening

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