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Editorial
Iron Deficiency Anemia in Female Workers: A Critical Occupational Health Priority

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Abstract

Background: Iron deficiency anemia (IDA) is a major occupational health concern among female industrial workers in Indonesia, with prevalence reaching 24–46%. It affects productivity, safety, and gender equity.
Methods: Narrative review of national surveys, WHO reports, and peer-reviewed studies on IDA prevalence, determinants, and workplace interventions.
Results: Evidence shows IDA reduces endurance, cognitive performance, and reaction time, increasing accident risk. Current workplace programs remain inconsistent and poorly integrated into occupational health systems.
Conclusions: IDA prevention should be mandated as part of occupational health policy through surveillance, supplementation, and nutrition programs to protect workers and improve productivity.
Keywords: iron deficiency anemia, female workers, occupational health, productivity, workplace nutrition, gender equity, Indonesia

Abstrak

Latar belakang: *Anemia defisiensi besi (ADB) merupakan masalah kesehatan kerja utama di kalangan pekerja industri perempuan di Indonesia, dengan prevalensi mencapai 24–46%. Hal ini mempengaruhi produktivitas, keselamatan, dan kesetaraan gender.*
Metode: *Tinjauan naratif terhadap survei nasional, laporan WHO, dan studi yang telah melalui penelaahan sejawat mengenai prevalensi ADB, determinan, dan intervensi di tempat kerja.*
Hasil: *Bukti menunjukkan bahwa ADB mengurangi daya tahan, kinerja kognitif, dan waktu reaksi, sehingga meningkatkan risiko kecelakaan. Program-program tempat kerja saat ini tetap tidak konsisten dan kurang terintegrasi dalam sistem kesehatan kerja.*
Kesimpulan**:** *Pencegahan ADB harus diwajibkan sebagai bagian dari kebijakan kesehatan kerja melalui pengawasan, suplementasi, dan program nutrisi untuk melindungi pekerja dan meningkatkan produktivitas.*
Kata kunci: *kelelahan kerja, SOFI, industri pertambangan*

Iron deficiency anemia remains a global public health challenge, disproportionately affecting women of reproductive age.[1,2] WHO estimates indicate nearly 30% of women aged 15–49 years are anemic, contributing to impaired cognitive function and reduced work capacity.[1] In Indonesia, prevalence rose from 19.7% in 2007 to 27.2% in 2018, with higher rates among industrial female workers.[3,4] Biological vulnerability and socioeconomic factors amplify risk, making IDA an occupational hazard rather than a mere nutritional issue.[5-6]

This editorial synthesizes evidence from WHO reports, Indonesian Riskesdas surveys, and peer-reviewed literature published between 1998 and 2025.[1,3,4,7] Sources were identified through PubMed and national databases using keywords: 'iron deficiency anemia', 'female workers', 'occupational health'. Data on prevalence, determinants, and interventions were extracted and analyzed narratively. Ethical considerations were not applicable as this is a secondary review.

National workplace hemoglobin surveys report anemia prevalence of 9.9% among workers overall, rising to 24.6% among female workers.[8] Industrial zones document rates up to 46%.[9] IDA reduces aerobic capacity, attention, and reaction speed, impairing productivity and safety.[10,11] Supplementation programs initiated in the 1990s remain inconsistently implemented.[12] Workplace canteens often lack iron-rich foods, and the triple burden of employment, caregiving, and reproduction accelerates iron depletion.[13,14]

Countries that have prioritized anemia reduction demonstrate measurable success in productivity and health outcomes. For example, Bangladesh's garment industry implemented workplace nutrition programs combining fortified lunches, iron-folic acid supplementation, and behavior change counseling, reducing anemia prevalence by 32 percentage points in 10 months among female workers.[10] Similarly, India's Anemia Mukt Bharat initiative integrated iron supplementation and nutrition education into workplace and community platforms, showing significant improvements in hemoglobin levels and productivity.[11] Beyond South Asia, the Philippines achieved a dramatic decline in anemia among women of reproductive age, from 27% in 2008 to 12% in 2018, by embedding anemia prevention into multisectoral strategies, including food fortification, health education, and workplace screening.[12] In Peru, partnerships between government and private sector introduced iron-fortified foods and workplace nutrition programs, improving maternal health and reducing anemia prevalence in industrial zones.[13] These examples underscore that success hinges on policy prioritization and multisectoral collaboration. Common drivers include: mandatory workplace screening and supplementation, provision of fortified meals in factory canteens, behavior change communication and gender-sensitive health education, and integration of anemia prevention into occupational safety and health (OSH) regulations. Countries that institutionalized these measures report not only improved hemoglobin levels but also enhanced productivity, reduced absenteeism, and better maternal-child health outcomes. For Indonesia, adopting similar structural approaches, supported by WHO's Accelerating Anaemia Reduction Framework and ILO's Food at Work guidelines, can transform IDA from a neglected issue into a measurable success story.[14,15]

It is clear that iron deficiency anemia among female industrial workers is a critical occupational health issue with far reaching implications for productivity, safety, and gender equity. Evidence from Indonesia and global exemplars such as Bangladesh, the Philippines, and Peru demonstrates that prioritizing anemia prevention within workplace health systems yields substantial health and economic benefits. Effective strategies include routine anemia screening, provision of iron-rich or fortified meals, supplementation programs, and integration of anemia prevention into OSH policies. To achieve sustainable progress, Indonesia must move beyond voluntary initiatives toward mandatory, multisectoral interventions, leveraging partnerships between government, industry, and worker organizations. Embedding anemia prevention into national labor and health policies will not only protect vulnerable workers but also strengthen economic competitiveness and advance gender-equitable labor practices. The time to act is now, transforming IDA management from a fragmented effort into a cornerstone of occupational health.

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