ISSN 2548-6462 (online), ISSN 2088-8740 (print)

DOI: 10.30644/rik.v15i1.1047

Strengthening Indonesia's adolescent anemia policy: a systematic review of global practices

Melisa Yuniarti[1], Anita Rahmiwati[2*], Suci Destriatania[3]
[1]Master of Public Health Study Program, Faculty of Public Health, Sriwijaya University
[2]Nutrition Study Program, Faculty of Public Health, Sriwijaya University
*Corresponding author's email: anita_rahmiwati@fkm.unsri.ac.id

Accepted: 25 May 2025; revision: 11 September 2025; published: 31 January 2026

Abstract

Background: Anemia is a persistent public health challenge in Indonesia, particularly among adolescent girls, with prevalence reaching 48.9% in 2018. Despite school-based iron and folic acid (IFA) supplementation programs, major implementation challenges remain.

Objective: To evaluate the implementation of IFA policies for adolescents in Indonesia and to identify global strategies that can strengthen national anemia prevention efforts.

Method: A systematic review was conducted following PRISMA guidelines, focusing on studies published between 2019 and 2024. PubMed, Google Scholar, and official Ministry of Health sources were searched using predefined eligibility criteria. Data from eligible studies were synthesized using thematic analysis. Search strings included terms such as: "iron and folic acid supplementation" OR "iron–folic acid" OR "IFA", combined with "adolescent" OR "school-age girls", and "policy" OR "program implementation" OR "coverage" OR "adherence".

Results: Five studies met the inclusion criteria. Four main barriers to effective IFA implementation were identified: (1) low adherence due to side effects and misconceptions; (2) logistical weaknesses in tablet distribution; (3) limited stakeholder engagement; and (4) lack of robust monitoring systems. Evidence from other countries shows that school-based education, digital monitoring, and community involvement can improve coverage and compliance.

Conclusion: Indonesia's IFA policy needs strengthening in both structural and behavioral domains. Integrating education, digital tracking, and peer involvement into existing school-based programs may enhance adherence and long-term sustainability.

Keywords: Iron-folic acid; Adolescence, anemia; Policy implementation.

INTRODUCTION

Iron deficiency anemia (IDA) is a widespread public health concern, particularly among young women, as it is closely linked to physiological changes during growth and the onset of menstruation (1). The causes of anemia are multifactorial, including nutritional deficiencies, impaired iron absorption, menstrual blood loss, infections, parasitic diseases, and genetic disorders; however, iron deficiency remains the primary cause of anemia in adolescents worldwide (2). Globally, anemia in young women aged 10–19 has profound consequences, such as impaired physical and cognitive performance, persistent fatigue, and adverse effects on reproductive health (3).

In Indonesia, anemia continues to pose a significant health challenge, with adolescent girls disproportionately affected. An evaluation in East Jakarta revealed irregularities in the implementation of iron-folic acid (IFA) supplementation, including inconsistent tablet distribution and weak monitoring mechanisms (4). To address this problem, the Indonesian government has issued several policies, such as Minister of Health Regulation No. 88 of 2014 concerning iron tablet standards for women of reproductive age and pregnant women, Circular Letter No. HK.03.03/V/0595/2016 on IFA distribution for adolescent girls, and Minister of Health Regulation No. 51 of 2016 regarding nutritional supplementation standards. These efforts align with World

Health Organization (WHO) recommendations for weekly supplementation with 60 mg elemental iron and 400 µg folic acid in areas where anemia prevalence exceeds 20% (5).

Despite these policy interventions, the prevalence of anemia among adolescent girls in Indonesia increased from 37.1% in 2013 to 48.9% in 2018. According to WHO, anemia in this group is diagnosed when hemoglobin levels fall below 12 g/dL or red blood cell counts drop below 4.2 million/µL (6). Adolescents aged 10–19 face heightened risk due to accelerated growth, increased erythropoiesis, and menstrual blood loss, all of which raise iron requirements (7). Data from the 2018 Basic Health Research (Riskesdas) survey showed that 76.2% of adolescent girls reported receiving iron tablets, with 80.9% obtaining them through school-based programs. However, 98.6% of recipients consumed fewer than the recommended 52 tablets annually, and 23.8% did not receive tablets at all. In certain areas of West Sumatra, coverage was reported to be as low as 1.5% (8). These findings indicate substantial gaps between national policy and implementation at school and community levels.

Anemia continues to be highly prevalent among adolescent girls worldwide, with an estimated global rate of 32.8%, predominantly due to iron deficiency (9). The WHO categorizes IDA as a critical health problem in low and middle income countries (LMICs) (10,11), where persistent anemia is often linked to nutritional and socioeconomic barriers. For instance, anemia among Indian women of reproductive age rose from 53% to 57% between 2015 and 2021, echoing trends in other LMICs (12,13). Regions such as South Asia and Central Africa continue to report the highest adolescent IDA burdens (14,15), with moderate to severe cases affecting up to 20% of girls in India and sub Saharan Africa (16,17). These global patterns highlight that policy presence alone is insufficient; effective implementation and sustained adherence are crucial.

Tackling adolescent anemia therefore demands integrated strategies that bridge the sectors of nutrition, healthcare, and education. Although Indonesia's IFA supplementation program has been in place since 2014, its effectiveness remains questionable. Individual factors such as side effects and lack of awareness, along with systemic issues including poor distribution and weak monitoring, continue to impede its success. Existing studies in Indonesia and other countries have examined various aspects of IFA programs, but a synthesized policy-focused analysis that links implementation barriers with global best practices for adolescent girls is still limited. This study aims to fill this gap by conducting a systematic review of IFA-related policies and programs for adolescents, identifying key implementation challenges, and summarizing international strategies that can inform evidence-based and sustainable policy improvements to reduce the burden of anemia among Indonesian adolescents.

METHOD

Study Design

This study is a systematic literature review that analyzes the implementation of iron and folic acid (IFA) supplementation programs among adolescent girls, with an emphasis on policy evaluation and international comparisons. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Data Selection Criteria (Eligibility Criteria)

a) Study types: Empirical studies, program evaluations, and policy briefs that examined IFA supplementation or anemia prevention among adolescents and reported on policy design, implementation, or program outcomes.
b) Population: Adolescents aged 10–19 years or school-age girls in junior or senior high schools.
c) Publication period: 2019–2024.
d) Sources: Academic databases (PubMed, Google Scholar) and official

publications from the Indonesian Ministry of Health.

e) Language: Articles published in English or Bahasa Indonesia.
f) Exclusion criteria: Studies not focusing on adolescents or IFA-related policy, clinical trials without a policy or implementation component, non–peer-reviewed articles, conference abstracts without full text, and full texts that were not open access.

Information Sources and Search Strategy

The literature search was conducted in PubMed, Google Scholar, and official Indonesian Ministry of Health repositories. A combination of Medical Subject Headings (MeSH) terms and free-text keywords was used. Search strings included terms such as:

a) "iron and folic acid supplementation" OR "iron–folic acid" OR "IFA"
b) combined with "adolescent" OR "school-age girls"
c) and "policy" OR "program implementation" OR "coverage" OR "adherence".

Boolean operators (AND/OR) were applied to refine the search, and reference lists of relevant articles were screened to identify additional sources that met the eligibility criteria.

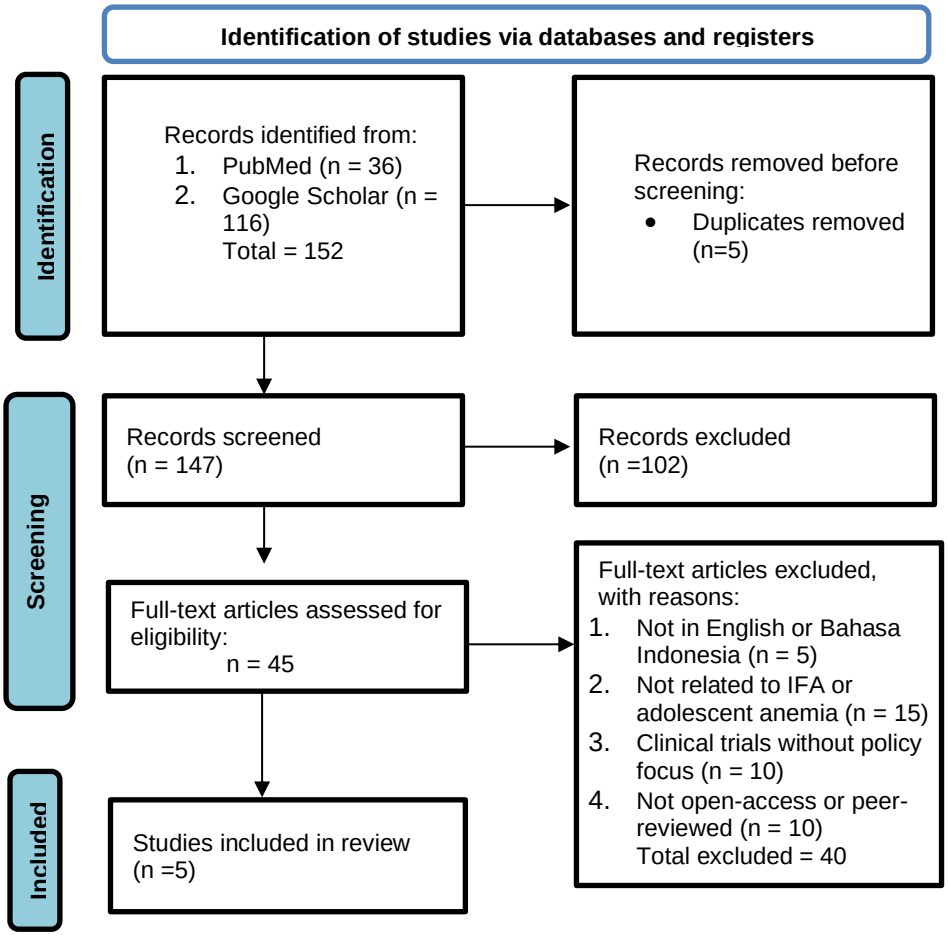

Figure 1. Study Selection (PRISMA Flow)

The initial search identified 152 records: 36 from PubMed and 116 from Google Scholar. After removal of duplicate entries (n = 5), 147 titles and abstracts were

screened against the predefined inclusion and exclusion criteria. Of these, 102 records were excluded as they were clearly irrelevant to adolescent IFA policies or anemia prevention. Forty five full text articles were then assessed for eligibility. Forty articles were excluded for the following reasons:

a) not published in English or Bahasa Indonesia (n = 5);
b) not related to IFA or adolescent anemia (n = 15);
c) clinical trials without a policy or implementation focus (n = 10);
d) not open access or not peer-reviewed (n = 10).

In total, five studies met all inclusion criteria and were included in the final synthesis. The selection process is summarized in Figure 1 (PRISMA flowchart).

Data Extraction and Analysis (Analytical Method)

Data from the included studies were extracted into a standardized summary table capturing: study setting, target population, characteristics of IFA or anemia-related policies, implementation strategies, outcomes (such as coverage, adherence, and hemoglobin changes), and reported barriers or facilitators. A thematic synthesis approach was applied to organize findings into four core domains:

1. Adherence and side effects
2. Logistics and distribution systems
3. Education and stakeholder engagement
4. Monitoring and evaluation mechanisms

This thematic framework enabled comparison across countries and contexts and facilitated the identification of strategies that could be feasibly adapted to strengthen adolescent anemia prevention policies in Indonesia.

RESULTS

A systematic literature search identified 152 records, comprising 36 articles from PubMed and 116 from Google Scholar. After removal of five duplicate entries, 147 titles and abstracts were screened for relevance based on the predefined inclusion and exclusion criteria. From these, 45 full-text articles were assessed in detail. Forty articles were excluded because they were not in English or Bahasa Indonesia (n = 5), not related to IFA or adolescent anemia (n = 15), were clinical trials without a policy focus (n = 10), or were not open-access or not peer-reviewed (n = 10). In total, five articles met all eligibility criteria and were included in the final analysis. The selection process is summarized in Figure 1, which illustrates the flow from initial identification to final inclusion.The five included studies provided key information on program implementation, coverage, adherence, and the impact of iron–folic acid supplementation among adolescent girls in various settings. Most interventions were school-based and focused on weekly IFA supplementation, with outcomes commonly reported as compliance rates, hemoglobin changes, perceived side effects, and implementation challenges.changes in hemoglobin The thematic synthesis of these studies is presented in Table 1. Four main themes were identified: (1) adherence and side effects; (2) logistics and distribution; (3) education and stakeholder involvement; and (4) monitoring and evaluation.

Table 1. Thematic Summary of Global Iron-Folic Acid Supplementation Programs and Lessons for Indonesia

Theme	Researchers (Year)	Country	Policy Focus / Strategy	Key Findings
Adherence and Side Effects	Susanti et al. (2021); Gosdin et al. (2020); Jafari et al. (2023)	Indonesia, Ghana, Iran	Addressing low compliance due to nausea, dizziness, and negative perceptions about IFA intake	School-level education, teacher involvement, and health literacy improve intake and reduce side effects
Logistics and Distribution	Fitriana & Pramardika (2019); Yudina & Fayasari (2020)	Indonesia	Standardizing distribution schedules, ensuring tablet availability, and strengthening logistics	Inconsistent distribution due to poor scheduling and lack of resources; improved planning is essential
Education and Stakeholder Involvement	Jafari et al. (2023); Gosdin et al. (2020); India MOHFW reports	Iran, Ghana, India	Engaging teachers, health educators, parents, and peers in supplement education	Involvement of teachers and students improves compliance and understanding of IFA benefits
Monitoring and Evaluation	Yudina & Fayasari (2020); Besmaya et al. (2024)	Indonesia	Implementing digital tools (tracking apps, intake cards), school-based recording systems	Digital tracking systems increase compliance; lack of monitoring weakens program impact

Studies highlighted that side effects, negative perceptions, and low health literacy contributed to low adherence, whereas school-level education, teacher involvement, and improved health literacy were associated with better intake. In terms of logistics, inconsistent distribution due to weak scheduling and limited resources was a recurrent problem, underscoring the need for standardized distribution mechanisms.

Programs that actively involved teachers, health educators, parents, and peers reported improved understanding of IFA benefits and higher compliance. Finally, the use of monitoring tools such as intake cards, pocketbooks, and digital recording systems was associated with higher adherence and stronger program accountability, while the absence of monitoring weakened program impact.

DISCUSSION

Based on the literature review and thematic synthesis, this discussion focuses on four key aspects: anemia prevalence and program effectiveness, barriers to implementation, the role of education and peer support, and logistical and monitoring challenges, followed by policy implications for Indonesia.

Comparison of Anemia Prevalence and Effectiveness of IFA Supplementation Programs

Anemia remains a significant global health issue, particularly among young women. Countries such as India, Ghana, and Iran have implemented targeted iron–folic acid (IFA) supplementation programs with varying degrees of success. In India, long-term weekly IFA implementation reduced anemia prevalence from 73.3% to 25.4% over four years (18). Similarly, Ghana's school-based initiative reported over 75% coverage and high adherence, despite side effects such as dizziness and heavy menstrual flow (5). In Indonesia, program outcomes vary widely:

while Samarinda reported coverage as high as 97.1% (19), West Pasaman's coverage reached only 1.5% (20). These contrasts indicate that the effectiveness of IFA programs is highly context-dependent and influenced by both system-level and behavioral factors.

Barriers to Program Implementation

Despite strong policy support through national health regulations, implementation of IFA supplementation in Indonesia faces multiple barriers. Common issues include low adherence due to side effects, socio-cultural beliefs, and logistical constraints in distribution. Studies in Jakarta and West Sumatra document inconsistent tablet distribution, limited monitoring systems, and weak coordination between schools and health services (4,20)Side effects such as nausea and dizziness are frequently cited as reasons for reluctance to consume supplements regularly (21). Cultural perceptions related to weight gain, reproductive health, and menstruation may also discourage consistent IFA intake (22). These findings suggest that regulatory frameworks alone are insufficient without parallel investments in communication, counseling, and service delivery quality.

The Role of Education and Peer Influence

Educational programs integrated with IFA supplementation have shown positive effects on awareness and adherence. In Iran, schools that combined supplementation with structured nutrition education reported an approximately 30% increase in student compliance compared with supplementation alone (22). In India, weekly IFA distribution accompanied by monthly education sessions achieved greater reductions in anemia than programs focusing only on tablet provision (23).

In Indonesia, combining weekly IFA with education initiatives has been associated with improvements in hemoglobin levels and increased awareness of anemia among adolescent girls (24). Parental and peer support also play important roles in promoting adherence; the involvement of parents, peers, and school communities contributes to motivation and sustained tablet intake (4,21,25). Peer-led education and youth health promotion activities have helped normalize IFA consumption and encourage behavior change (26).

Logistical Challenges and the Need for Monitoring Systems

Inconsistent tablet distribution remains a critical challenge in both Indonesia and comparator countries. Studies from Ghana and several regions in Indonesia report that students often receive fewer tablets than recommended due to supply chain interruptions, limited human resources, or weak planning (5,19,20). Monitoring tools such as iron intake cards and self-monitoring pocketbooks have been shown to increase compliance from 56.9% to 82.4% in certain Indonesian contexts (27). Conversely, the absence of record-keeping mechanisms makes it difficult to track coverage, adherence, and program outcomes (21). Schools and health facilities that employ computerized or digital tracking systems demonstrate better adherence and more reliable evaluation data (18). These findings underscore the need to strengthen supply chains and adopt simple but systematic monitoring systems as integral components of IFA policies.

Policy Implications and Adaptation in Indonesia

Global experiences provide useful lessons for refining Indonesia's adolescent anemia control strategy. Ghana's integration of educators into program training and India's

combination of IFA supplementation with regular health education sessions illustrate practical and scalable approaches. For Indonesia, a multisectoral strategy that systematically involves schools, health centers, families, and communities is required.

Key directions emerging from the reviewed evidence include ensuring consistent weekly IFA distribution aligned with national standards; embedding structured nutrition and anemia education within the school curriculum; using monitoring tools such as IFA intake cards and digital logs to track adherence (18,27); engaging parents and peers to strengthen motivation and address myths (3,21,26); and allocating adequate resources for health worker training and logistics planning (19,20). Enhancing sustainability through complementary micronutrient interventions and menstrual health education may further improve program outcomes (28,29).

At the same time, the evidence base has limitations. Only five studies met the inclusion criteria, and most were observational with heterogeneous designs, target populations, and outcome measures. These characteristics limit direct comparison of effect sizes and restrict causal interpretation of specific policy components. Nevertheless, the convergent themes across studies provide a useful directional guide for strengthening adolescent IFA policies in Indonesia.

Based on the results of the literature review, several policy elements that have proven successful in other countries are highly relevant for Indonesia, provided that local contextual conditions are carefully considered. Indonesia's current anemia control strategies rely heavily on school-based supplementation and awareness campaigns, but they often lack systemic enforcement, consistent implementation, and integrated educational outreach (4,20). Lessons from global best practices suggest that outcomes could be strengthened by focusing on a set of complementary strategies.

First, weekly IFA supplementation has been shown to be effective in reducing anemia prevalence by up to 48% in settings such as India and Iran (22,30)

Second, integrated health education has demonstrated improved adherence and awareness in Ghana, India, and Indonesia by combining supplementation with structured, routine education sessions (23,24).

Third, peer and parental involvement has been proven effective in sustaining compliance by leveraging social support within households and school communities in both Indonesia and Ghana (21,25,26).

Fourth, supplementation monitoring systems, including pocketbooks and digital logs, have increased adherence and transparency by enabling systematic tracking of intake and follow-up (31).

Finally, combined micronutrient and broader health strategies have enhanced sustainability and outcomes in Indonesian multi-sector programs by aligning anemia prevention with other priorities such as stunting reduction (28,29). Taken together, these elements form a coherent package of policies that can inform more robust adolescent anemia control efforts in Indonesia.

Table 2. Summary of Effective Strategies from Literature Review

Policy	Country	Effectiveness	Implementation Constraints
Weekly IFA Supplementation (9,10,12)	India, Indonesia, Iran	Reduced anemia prevalence by 20%–48%	Low adherence, side effects, distribution inconsistencies
Education Supplementation (15,20)	Ghana, India, Indonesia	Improved awareness, increased hemoglobin levels, reduced drop-outs	Needs trained personnel and regular structured sessions
Peer/Parental Involvement (17,21,22)	Ghana, Indonesia	Higher compliance through social influence and parental support	Cultural barriers, limited parent-school collaboration
Monitoring Tools (19,23)	Indonesia, Ghana	Compliance increased to 82.4%, better program evaluation	Lack of digital infrastructure, poor reporting consistency
Micronutrient Integration (24,25)	Indonesia, multi-country	Strengthened anemia and stunting prevention; program sustainability improved	Requires budget, coordination across sectors

Policy Analysis and Adaptation for Indonesia

While regulation-based interventions, such as mandatory distribution of IFA tablets, help to ensure wide nominal coverage, behavior-change approaches are essential for achieving long-term effectiveness. Evidence shows that pairing supplementation with school health education, supported by routine monitoring and peer reinforcement, leads to more sustained improvements in adherence and anemia status (4,23,24). However, challenges such as incomplete distribution, insufficient health personnel, limited training, and weak coordination between sectors continue to hinder optimal program outcomes in Indonesia.

Adapting global strategies such as India's integrated education model and Ghana's teacher-led engagement offers an opportunity to strengthen anemia prevention at both school and community levels (22,23,30). Programs that encourage parent involvement, equip schools with simple monitoring tools (e.g., iron cards, pocketbooks), and openly address socio-cultural taboos related to menstruation, body image, and perceived side effects have shown promising results (21,25–27,29). These approaches can be scaled up with appropriate investment, clear operational guidelines, and multi-sectoral collaboration between education authorities, health services, and community organizations.

In addition, integrating IFA programs with broader adolescent health initiatives, including nutrition counseling and menstrual health education, may enhance both uptake and sustainability (28,29). Strengthening supervision systems, data use for decision-making, and feedback loops between schools and primary healthcare facilities will be critical to ensure that policies translate into effective, equitable practice at the local level.

CONCLUSIONS

1. Global strategies for adolescent anemia prevention typically combine weekly iron–folic acid (IFA) supplementation, nutrition education, behavioral support, and structured monitoring systems.
2. Regulation-based approaches can achieve broad initial coverage, but long-term effectiveness depends on

addressing individual, socio-cultural, and system-level barriers to adherence.
3. Evidence from India, Ghana, Iran, and Indonesia shows that integrating IFA supplementation with school-based health education improves knowledge, treatment acceptance, and hemoglobin outcomes.
4. Peer and parental engagement, supported by teachers and health workers, is critical to counter misconceptions, manage perceived side effects, and sustain regular tablet intake among adolescent girls.
5. Simple monitoring tools (such as intake cards, pocketbooks, or digital logs) strengthen accountability, enable follow-up, and are associated with higher adherence to IFA regimens.
6. For Indonesia, strengthening both structural components (logistics, supply chains, monitoring) and behavioral components (education, counseling, social support) is essential to reduce anemia prevalence and improve the sustainability of IFA policies for adolescents.

REFERENCES

1. Permatasari T, Briawan D, Madanijah S. Efektivitas Program Suplementasi Zat Besi pada Remaja Putri di Kota Bogor (Effectiveness of Iron Supplementation Programme in Adolescent girl at Bogor City). J Mkmi [Internet]. 2018;14(1):1–8.
2. Pasricha SR, Tye-Din J, Muckenthaler MU, Swinkels DW. Iron deficiency. Lancet [Internet]. 2021;397(10270):233–48.
3. WHO. Guideline: Intermittent Iron and Folic Acid Supplementation in Menstruating Women. World Heal Organ [Internet]. 2011;1–30.
4. Yudina MK, Fayasari A. Evaluasi Program Pemberian Tablet Tambah Darah pada Remaja Putri di Jakarta Timur. J Ilm Kesehat. 2020;2(3):147–58.
5. Kementerian Kesehatan RI. Pencegahan dan Penanggulangan Anemia Pada Remaja Putri dan Wanita Usia Subur. 2018;1–59.
6. WHO. Global Nutrition Targets 2025 Anaemia Policy Brief. 2025;1–8.
7. Sekartini R, Aisiyah Widjaja N, Ratna Mutu Manikam N, Jo J, Wagiu Basrowi R, Dilantika C. Iron-Deficiency Anemia: Indonesia's Striving. Asia Pac J Paediatr Child Heal. 2022;5:3–16.
8. Alfiah E, Briawan D, Khomsan A, Dewi M, Ekayanti I, Mardewi, et al. Coverage and adherence of weekly iron folic acid supplementation among school going adolescent girls in indonesia. J Nutr Sci Vitaminol (Tokyo). 2020;66:S118–21.
9. Panjaitan WS, Kusnandar K, Hikmayani NH. Development of a Snakes and Ladders Game-Based Nutrition Education Media to Adderss Anemia in Adolescent Females. Picnhs. 2023;4(1):267–74.
10. Mantadakis E. Iron Deficiency Anemia in Children Residing in High and Low-Income Countries: Risk Factors, Prevention, Diagnosis and Therapy. Mediterr J Hematol Infect Dis. 2020;12(1):e2020041.
11. Safiri S, Kolahi A, Noori M, Nejadghaderi SA, Karamzad N, Bragazzi NL, et al. Burden of Anemia and Its Underlying Causes in 204 Countries and Territories, 1990–2019: Results From the Global Burden of Disease Study 2019. J Hematol Oncol. 2021;14(1).
12. Oyungu E, Roose A, Ombitsa AR, Yang Z, Vreeman R, McHenry MS. Anemia and Iron-Deficiency Anemia in Children Born to Mothers With HIV in Western Kenya. Glob Pediatr Heal. 2021;8.
13. Let S, Tiwari S, Singh A, Chakrabarty M. Prevalence and Determinants of Anaemia Among Women of Reproductive Age in Aspirational Districts of India: An Analysis of NFHS

4 and NFHS 5 Data. BMC Public Health. 2024;24(1).
14. Stevens GA, Paciorek C, Flores-Urrutia MC, Borghi E, Namasté S, Wirth JP, et al. National, Regional, and Global Estimates of Anaemia by Severity in Women and Children for 2000–19: A Pooled Analysis of Population-Representative Data. Lancet Glob Heal. 2022;10(5):e627–39.
15. Zheng W, Peng B, Wu YH, Gauan L, Wang S, Ning H. Global, Regional, and National Anemia Burden Among Women of Reproductive Age (15–49 Years) From 1990 to 2021: An Analysis of the Global Burden of Disease Study 2021. Front Nutr. 2025;12.
16. Chauhan S, Kumar P, Marbaniang SP, Srivast S, Patel R. Prevalence and Predictors of Anaemia Among Adolescents in India: An Exploration From Understanding the Lives of Adolescents and Young Adults Survey. 2021.
17. Yusufu I, Cliffer I, Yussuf MH, Anthony CRM, Mapendo F, Abdulla S, et al. Factors Associated With Anemia Among School-Going Adolescents Aged 10–17 Years in Zanzibar, Tanzania: A Cross Sectional Study. BMC Public Health. 2023;23(1).
18. Dewi NR, MS SW, Hidayana. The Impact of Health Behaviors on Iron Supplementation Adherence and Anemia Prevalence among Pregnant Women: Evidence from a Primary Care Setting in Aceh Tengah, Indonesia. Community Med Educ J. 2024;5(3):686–97.
19. Fitriana F, Dwi Pramardika D. Evaluasi Program Tablet Tambah Darah pada Remaja Putri. Media Publ Promosi Kesehat Indones. 2019;2(3):200–7.
20. Susanti S, Sulastri D, Desmawati. Evaluasi Pemberian Tablet Tambah Darah Pada Remaja Putri. J Kesehat. 2021;9(3):140–9.
21. Gosdin L, Sharma AJ, Tripp K, Amoaful EF, Mahama AB, Selenje L, et al. A School-Based Weekly Iron and Folic Acid Supplementation Program Effectively Reduces Anemia in a Prospective Cohort of Ghanaian Adolescent Girls. J Nutr. 2021;151(6):1–23.
22. Jafari A, Hosseini Z, Tehrani H, Alami A. Evaluation of the barriers and facilitators of iron supplementation program among adolescent females. Clin Nutr ESPEN [Internet]. 2023;56:36–42.
23. Singh M, Rajoura OP, Honnakamble RA. Assessment of Weekly Iron–Folic Acid Supplementation with and without Health Education on Anemia in Adolescent Girls: A Comparative Study Abstract. Int J Prev Med. 2020;11:66–9.
24. Rakanita Y, Sinuraya RK, Alfian SD, Suradji EW, Suwantika AA, Syamsunarno MRAA, et al. Adherence Does Not Guarantee the Outcome of Iron Supplementation for Reproductive-Age Women With Anemia in West Papua Province, Indonesia: A Quasi-experimental Study. Int J Women's Heal Reprod Sci. 2023;11(1):3–10.
25. Amani Z, Sebayang SK. the Effect of Iron Supplementation and Other School-Based Support on Anemia Status in Adolescents: a Systematic Literature Review. Indones Midwifery Heal Sci J. 2024;8(3):312–25.
26. Utami A, Margawati A, Pramono D, Julianti HP, Adespin DA, Wulandari DR. The Effectiveness of Iron-folic Acid Supplementation and Education Intervention to Hemoglobin Level, Knowledge, and Compliance among Adolescent Girls in Islamic Boarding School. Open Access Maced J Med Sci. 2022;10(E):1141–6.
27. Besmaya BM, Widiawati A, Utami IT, Sulistiawati Y. Optimizing Compliance and Reducing Anemia: The Impact of Self-Monitoring Pocket Books on Iron Tablet Intake Among Adolescent Girls at Taruna Utama Vocational School, East Lampung. Int J Contemp Sci. 2024;1(12):884–93.

28. Parwati NM, Januraga P, Suarjaya. The Effect of School-Based Program of Iron Supplementation in Preventing and Controlling Iron Deficiency Anemia Among Adolescent Girls: Literature Reviews. 2020;22(Ishr 2019):126–32.
29. Darmayanti, Rizani A. Pemanfaatan Kartu Pemantauan Konsumsi Tablet Tambah Darah di Wilayah Puskemsas Kelayan Timur. J Rakat Sehat. 2023;2(1):29–38.
30. Dewi YR, Ismawatie E, Maulani Y, Sumargiyanto E. Efficacy of Giving Iron Tablets on the Incidence of Anemia in Senior High School Students in Klaten, Indonesia. Sriwij J Obstet Gynecol (SJOG). 2024;60–3.
31. Isnaini YS, Pihahey PJ, Bahra, Mintaningtyas SI, Simanjuntak MK, Fabanjo IJ. Knowledge, attitude, practice and compliance to weekly iron supplementation among female public junior high school students in West Papua. Public Heal Indones. 2024;10(4):38–48.