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RESEARCH ARTICLE

Mobile Health Application Tracking of Iron Adherence and Hemoglobin Outcomes in Mildly Anemic Adolescent Girls

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ABSTRACT

Anemia among adolescent girls remains a significant public health challenge in Indonesia, with prevalence increasing from 37.1% in 2013 to 48.9% in 2018. Despite the implementation of a national iron supplementation program, adherence rates remain critically low, ranging from 1% to 10%. This study investigated the correlation between adherence to iron supplementation and hemoglobin levels in adolescent girls with mild anemia. A total of 76 female students aged 16–18 years, presenting with baseline hemoglobin levels of 11.0–11.9 g/dL, were enrolled from four schools in Jember Regency, East Java. Participants were equally divided into an intervention group receiving the MonEv application and a control group, with a follow-up period of four months. The results demonstrated progressive improvements in the intervention group: the proportion of participants with good knowledge increased from 1.3% to 30.3%, those exhibiting positive attitudes rose from 3.9% to 31.6%, and normal hemoglobin levels were achieved by 42.1% of participants by the fourth month. A statistically significant correlation between adherence to iron supplementation and hemoglobin normalization was observed at four months ($p = 0.003$), indicating that sustained digital monitoring meaningfully supports biological recovery. These findings demonstrate the potential of mobile health (mHealth) technology as a scalable, evidence-based strategy for adolescent anemia prevention in low-resource settings.

Contribution/Originality: This study contributes to the existing literature by examining tracking of iron treatment adherence and hemoglobin levels in adolescent girls with mild anemia using a mobile health app. This study provides digital monitoring in anemia management that supports improved adherence and hemoglobin level, enhancing the accuracy of anemia patient evaluations.

1. Introduction

Anemia remains a critical public health challenge among adolescents worldwide, particularly in low- and middle-income countries where nutritional deficiencies are prevalent. According to the World Health Organization (WHO), iron deficiency anemia affects approximately 750 million children and adolescents globally, with female adolescents disproportionately affected due to physiological demands associated with menstruation, rapid physical growth, and inadequate dietary iron intake (Molla et al., 2023). In Indonesia, the burden is particularly alarming. Data from *Riset Kesehatan Dasar* (Riskesdas) revealed that the prevalence of anemia among adolescent girls aged 15–24 years increased from 37.1% in 2013 to 48.9% in 2018, reflecting a worsening trend that demands urgent and targeted intervention (Kementerian Kesehatan RI, 2023). At the regional level, studies conducted in the Jember Regency of East Java demonstrated an anemia prevalence of 10.7% among high school and vocational school female students, with specific schools in the Patrang district reporting rates as high as 9.1% (Sari et al., 2022).

The consequences of adolescent anemia extend far beyond individual health. Iron deficiency anemia in this population is associated with impaired cognitive development, reduced academic achievement, diminished immune function, and decreased reproductive health outcomes (Rahmatina et al., 2025). From an intergenerational perspective, adolescent girls who enter pregnancy in an anemic state face a substantially elevated risk of delivering infants with low birth weight (LBW) and of contributing to the perpetuation of stunting a condition affecting approximately 19.3% of Indonesian children as of 2018 (UNICEF Indonesia, 2022). The physiological vulnerability of female adolescents is further compounded by dietary patterns characterized by low consumption of iron-rich foods, reliance on plant-based diets with poor bioavailability of non-heme iron, and socioeconomic constraints limiting access to adequate nutrition (Andriastuti et al., 2020).

Mild anemia, operationally defined in this study as a hemoglobin (*Hb*) level between 11.0 and 11.9 g/dL among non-pregnant adolescent females, represents the earliest and most prevalent stage of iron deficiency progression. Despite being clinically manageable, mild anemia is frequently underdiagnosed and undertreated, largely due to the absence of overt symptoms and low health literacy among the adolescent population. The Indonesian government has responded to this challenge by distributing weekly iron supplementation through school-based programs; however, *adherence* rates among adolescent girls remain critically low, estimated at only 1–10% nationally (Kementerian Kesehatan RI, 2023). *Adherence* in this study is operationally defined as the consistent and timely consumption of prescribed iron supplements according to the study protocol specifically, one iron tablet consumed every Friday for 16 consecutive weeks and is categorized as *adherent* (≥80% compliance), *less adherent* (50–79%), or *non-adherent* (<50%), measured through digital self-reporting via the MonEv application.

The primary barriers to iron supplementation adherence among adolescents include forgetfulness, lack of motivation, insufficient knowledge regarding the importance of iron for *hemoglobin* synthesis, side effects such as nausea and constipation, and the absence of effective real-time monitoring systems (Alghabiwi et al., 2025). Conventional monitoring approaches, including manual recording cards and WhatsApp-based group reminders, have demonstrated limited effectiveness due to structural mismatches between available infrastructure and actual population needs (Taufiqurrahman et al., 2025). This gap underscores the urgent need for an innovative, technology-driven solution capable of providing systematic, personalized, and real-time adherence support.

The rapid expansion of mobile technology in Indonesia, where smartphone penetration has reached 86.6% of the population, presents a significant opportunity for *mobile health* (*mHealth*) interventions in adolescent nutrition programs (Ghafouri et al., 2026). Android-based health applications offer scalable platforms for integrating reminder systems, self-monitoring tools, educational content, and progress visualization features that can meaningfully influence health behavior (Elsharkawy et al., 2022). The Monitoring and Evaluation (MonEv) mobile application was designed to directly address the gaps through the implementation of automated weekly reminders delivered each Friday evening, photographic confirmation of tablet intake, electronic adherence tracking, and educational content on iron deficiency anemia specifically adapted for adolescent users.

Research gap: While previous studies have examined the effectiveness of digital health interventions on medication adherence broadly, and others have explored hemoglobin changes following iron supplementation, few studies have specifically investigated the *correlation* between digitally monitored iron supplementation adherence and hemoglobin level changes among mild anemic adolescent girls within a structured quasi-experimental framework utilizing a purpose-built mobile application. Most existing *mHealth* studies in Indonesia focus on knowledge and attitude outcomes without establishing a statistically tested relationship between adherence behavior and biological outcomes such as hemoglobin normalization (Helmyati et al., 2023). This study addresses that gap by positioning adherence as the primary independent variable and hemoglobin level as the measurable biological outcome, evaluated at baseline, two months, and four months post-intervention.

The present study investigated the association between adherence to the prescribed regimen and hemoglobin levels in a cohort of mildly anemic adolescents during the post-intervention phase. Additionally, this study seeks to assess changes in knowledge and attitudes toward iron supplementation following the intervention. The findings are expected to contribute evidence-based recommendations for integrating *mHealth* technology into national adolescent anemia prevention programs in Indonesia and similar low-resource settings, ultimately supporting broader public health goals of reducing maternal mortality, preventing stunting, and improving adolescent reproductive health outcomes.

2. Literature Review

Adolescent anemia, particularly iron deficiency anemia, remains a persistent public health burden in low- and middle-income countries, with female adolescents disproportionately affected due to menstruation-related iron loss and inadequate dietary intake (Belay et al., 2025). In Indonesia, national data indicate a worsening prevalence trend, rising from 37.1% to 48.9% between 2013 and 2018 among adolescent girls,

underscoring the urgency of scalable and effective interventions (Kementerian Kesehatan RI, 2023). Iron supplementation through weekly distribution represents the government's primary strategy; however, adherence rates remain critically low at 1–10% nationally, largely attributable to forgetfulness, side effects, and inadequate monitoring systems. Conventional reminder approaches, including manual cards and group messaging, have demonstrated limited sustained effectiveness (Yudina & Fayasari, 2020).

The emergence of *mobile health* (mHealth) technology offers promising alternatives. Android-based applications incorporating automated reminders, self-monitoring features, and educational content have demonstrated meaningful improvements in medication adherence across diverse populations (Balcha et al., 2023). Specifically, digitally monitored supplementation has shown measurable biological outcomes, including hemoglobin normalization among anemic adolescents (Helmyati et al., 2023). Furthermore, the integration of educational modules into mHealth platforms has been shown to substantially enhance adolescents' knowledge and attitudes toward iron supplementation, thereby promoting sustained behavioral adherence over extended intervention periods (Fite et al., 2021).

3. Research Methods

The research design uses quantitative to determine the correlation of adherence and the level of hemoglobin among mild anemia adolescents. Research location: In the Jember district of East Java Province because, in 2022, Jember ranked the highest in East Java for maternal and infant mortality, with a prevalence of 15.6%, and anemia in adolescents, with a prevalence of 14.1% (Jember et al. Office, 2022), This study included adolescents from the Patrang sub-district, namely four schools, (i) Senior High School Five Jember, (ii) Dr. Soebandi Vocational High School, (iii) Vocational High School One Jember, and (iv) Vocational High School Three Jember. Population: This study used 152 adolescent girls who received monthly iron supplements from the government. Sample Size: Using Cohen's calculator, 76 adolescent girls were selected. Sample Size Justification: The sample was adjusted to the inclusion criteria: adolescent girls, mild anemia, and regular menstruation. Sampling Method: Purposive sampling was used, adjusted to the criteria. Data Collection: Using a questionnaire available in the MonEv application and hemoglobin level measurements. The questionnaire was designed to measure compliance. The validity and reliability (obtained values of 0.384-0.656, more significant than the table value of 0.361) and reliability (Cronbach's alpha value of 0.813 is more significant than 0.6) were tested (Handayani et al., 2021). Data analysis using SPSS Spearman to examine the correlation between adherence and hemoglobin levels among mildly anemic adolescents. Ethical Considerations: This study involved human subjects for which ethics approval was granted, and informed consent was obtained from all participants and their parents. Ethics approval was obtained from the Universiti Teknologi Mara Ethics Committee under number REC/04/2025 (PG/MR/246). Informed consent was obtained from participants and their parents, who were previously informed of the purpose of data collection, methods, and risks.

4. Results

4.1. Demographic Characteristics of Participants

A total of 76 adolescent girls were enrolled in this study, equally distributed between the baseline demographic profiles of both groups, as presented in Table 1.

Table 1: Demographic Characteristics of Control and Intervention Group Participants

Demographic	**Participants (n=76)**	
Age		
16 years old	50	65.8
17 years old	8	10.5
18 years old	18	23.7
Menarche		
9 years old	0	0.0
10 years old	5	6.6
11 years old	12	15.8
12 years old	25	32.9
13 years old	25	32.9
14 years old	4	5.3
15 years old	1	1.3
16 years old	4	5.3
Body Mass Index (BMI)		
Overweight	13	17.1
Normal	60	78.9
Underweight	3	3.9
Upper Arm Circumference		
Calorie energy deficiency	22	28.9
Normal	54	71.1

The demographic profile of the participants (n = 76) indicates that the majority were 16 years old, accounting for 65.8% of the sample, reflecting a predominance of mid-adolescent individuals in this study population. In terms of menarche, most participants reported experiencing their first menstruation at the ages of 12 and 13 years, each comprising 32.9% of respondents. This finding suggests that the onset of menarche among participants largely falls within the typical age range of early adolescence.

Based on Body Mass Index (BMI), the majority of participants were classified as having normal nutritional status (78.9%), indicating that most respondents had an adequate weight relative to their height. Similarly, assessment of upper arm circumference revealed that most participants (71.1%) were within the normal category, suggesting that the majority had sufficient energy reserves and were not affected by chronic energy deficiency.

4.2. Knowledge, Attitudes, and Hemoglobin Levels Across Assessment Time Points

Changes in knowledge, attitudes, and hemoglobin levels in the intervention group were assessed at three time points: baseline, 4 months post-intervention. The proportion of participants demonstrating good knowledge rose markedly to 30.3%, positive attitudes increased to 31.6%, and 42.1% of participants achieved normal hemoglobin levels. The findings are summarized in Table 2.

Table 2: Distribution of Knowledge, Attitudes, and Hemoglobin Levels 4th Month

Variable	N=76	%
Knowledge		
Good	23	30.3
Moderate	31	40.8
Poor	22	28.9
Attitude		
Positive	24	31.6
Neutral	37	48.7
Negative	15	19.7
Hemoglobin Level		
Normal Hb	32	42.1
Mild Anemia	44	57.9

4.3. Correlation Between Adherence and Hemoglobin Levels

The correlation between iron supplementation adherence categories and hemoglobin status across all three assessment time points, analyzed using *Spearman's rank correlation*, is presented in Table 3.

Table 3: Correlation Between Iron Supplementation Adherence and Hemoglobin Levels in the Intervention Group

Adherence	0 Month			2nd Month			4th Month		
	Normal Hb n (%)	Mild Anemia n (%)	p-value	Normal Hb n (%)	Mild Anemia n (%)	p-value	Normal Hb n (%)	Mild Anemia n (%)	p-value
Adherent	0 (0.0)	0 (0.0)	0.249*	3 (3.9)	7 (9.2)	0.225*	9 (11.8)	16 (21.0)	0.003*
Less adhrent	0 (0.0)	0 (0.0)	-0.134**	1 (1.3)	6 (7.9)	-0.141**	18 (23.6)	17 (22.3)	0.196**
Non-adherent	76 (100.0)	76 (100.0)	—	7 (9.2)	52 (68.5)	—	5 (6.8)	11 (14.5)	—

*Sig. (2-tailed) Spearman's
** Correlation Coefficient

At baseline, all 76 participants were classified as non-adherent, and the entire cohort presented with mild anemia, yielding no statistically significant correlation (p = 0.249). At the 2-month assessment, marginal improvements in adherence were noted, with 3.9% achieving adherent status and 1.3% classified as less adherent; however, the correlation between adherence and hemoglobin normalization remained statistically non-significant (p = 0.225). By the 4th month, a statistically significant and positive correlation between adherence and hemoglobin normalization was established (p = 0.003), with 11.8% of adherent participants achieving normal hemoglobin levels. These findings collectively suggest that consistent adherence to iron supplementation over four month is significantly correlated with improvements in hemoglobin levels among adolescent girls with mild anemia.

5. Discussion

Collectively, these findings demonstrate that consistent adherence to iron supplementation is associated with a significant increase in hemoglobin concentrations among adolescent girls with mild anemia. These results are strengthened by the findings of Taufiqurrahman et al. (2025), which proves that non-compliance with iron supplement consumption increases the risk of anemia by up to 24.5 times. Biologically, regular and scheduled iron consumption supports *hemoglobin synthesis* through the provision of an iron substrate that is adequate for erythropoiesis. The automatic reminder mechanism and verification of consumption photos in MonEv have been proven to be able to overcome the main obstacles to compliance, namely forgetfulness and lack of motivation (Wardani, 2024).

MonEv application-based interventions show more structured effectiveness than conventional approaches. A similar digital approach proved effective in a study in Maluku, where WhatsApp-based reminders significantly improved compliance and hemoglobin levels compared to the control group ($p = 0.001$)(Laurence et al., 2025). Systematic review emphasized that the main barriers to supplementation compliance, including side effects, forgetfulness, and logistical constraints, can be effectively overcome through digital innovation and school-based approaches (Fitri et al., 2025). MonEv's advantage lies in combining automatic reminder features, consumption documentation, and educational modules into a single integrated platform, making it a comprehensive solution relevant at a national scale.

The findings of this study have important practical and public health implications, particularly for anemia prevention strategies among adolescent girls. The observed association between iron supplementation adherence and hemoglobin levels underscores that the effectiveness of supplementation programs depends not only on the provision of iron tablets but also on sustained adherence among the target population (Gosdin et al., 2021). This highlights the need for interventions that go beyond distribution and actively address behavioral factors influencing compliance (Handiso et al., 2021).

From a practical perspective, integrating adherence support strategies into routine adolescent health programs is essential. School-based initiatives, which are commonly used platforms for iron supplementation, should incorporate structured monitoring systems, regular follow-up, and tailored health education to improve awareness and motivation (Fitri et al., 2025). The use of mobile monitoring applications, as implemented in this study, offers a promising approach to enhance adherence through reminders, self-tracking, and real-time feedback. Such digital tools can empower adolescents to take a more active role in managing their health behaviors (Hong et al., 2025).

At the public health level, these findings support the growing emphasis on digital health interventions in resource-limited settings. Incorporating mobile health technologies into national anemia control programs could strengthen program implementation, improve adherence rates, and ultimately enhance health outcomes. Policymakers should consider investing in scalable and user-friendly digital platforms that can be integrated with existing healthcare systems. Overall, improving adherence to iron supplementation through innovative and context-appropriate strategies has the potential to significantly reduce the burden of anemia among adolescent girls and contribute to long-term improvements in maternal and reproductive health outcomes.

6. Conclusion

This study demonstrates that the MonEv application significantly improves adherence to iron supplementation, as well as knowledge, attitude, and hemoglobin levels among adolescent girls with mild anemia. The significant correlation between adherence and hemoglobin normalization observed by the fourth month underscores the importance of continuous digital monitoring. These findings support the integration of mobile health technology into Indonesia's national anemia prevention programs, offering a scalable, evidence-based strategy to enhance adolescent reproductive health.

Ethics Approval and Consent to Participate

The researchers used research ethics guidelines provided by the Research Ethics Committee, Research Management Centre, Universiti Teknologi MARA. All procedures involving human participants in this study were conducted in accordance with the ethical standards of the institutional research committee. Informed consent was obtained from all participants and their parents.

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Conflict of Interest

The authors declare no conflict of interest.

References

Alghabiwi, R. S., Yahya, A. A. D., Ahmed, W., Albeshri, A., Albayedh, J. J., Alshammari, A. A., Alkhathami, F. S. A., Alghannam, J. H., & Mariee, A. A. (2025). Nurses Led Interventions to Combat Female Adolescents' Anemia: A Systematic Review. *Vascular and Endovascular Review*. https://doi.org/10.64149/J.Ver.8.20s.62-75

Andriastuti, M., Ilmana, G., Nawangwulan, S. A., & Kosasih, K. A. (2020). Prevalence of anemia and iron profile among children and adolescent with low socio-economic status. *International Journal of Pediatrics and Adolescent Medicine*, *7*(2), 88–92. https://doi.org/https://doi.org/10.1016/j.ijpam.2019.11.001

Balcha, W. F., Eteffa, T., Arega Tesfu, A., & Abeje Alemayehu, B. (2023). Maternal Knowledge of Anemia and Adherence to its Prevention Strategies: A Health Facility-Based Cross-Sectional Study Design. *Inquiry (United States)*, *60*. https://doi.org/10.1177/00469580231167731

Belay, D. G., Amlak, B. T., Chilot, D., Alem, A. Z., & Merid, M. W. (2025). Pooled prevalence of anaemia and its associated factors among adolescent girls in East and West Africa: a systematic review and meta-analysis. *BMC Public Health*, *25*(1). https://doi.org/10.1186/s12889-025-23701-4

Elsharkawy, N. B., Abdelaziz, E. M., Ouda, M. M., & Oraby, F. A. (2022). Effectiveness of Health Information Package Program on Knowledge and Compliance among Pregnant Women with Anemia: A Randomized Controlled Trial. *International Journal of Environmental Research and Public Health*, *19*(5). https://doi.org/10.3390/ijerph19052724

Fitri, A. A., Rahfiludin, M. Z., & Agushybana, F. (2025). Digital Media Interventions for Anemia Prevention Among Adolescent Girls: A Scoping Review. *Media Publikasi Promosi Kesehatan Indonesia (MPPKI)*, *8*(12), 1602–1616. https://doi.org/10.56338/mppki.v8i12.8449

Ghafouri, R., Azizi, Z., Moradi, S., & Nazari, M. (2026). Comparative impact of edutainment education via web application and mobile application on anemia prevention. *Scientific Reports*, *16*(1), 1–9. https://doi.org/10.1038/s41598-025-31024-y

Gosdin, Lucas, Sharma, J, A., Tripp, Katie, Amoaful, Foriwa, Esi, Mahama, B, Abraham, Selenje, Lilian, Jefferds, M. E., Martorell, R., Ramakrishnan, U., & Addo, O. Y. (2021). A School-Based Weekly Iron and Folic Acid Supplementation Program Effectively Reduces Anemia in a Prospective Cohort of Ghanaian Adolescent Girls. *Journal of Nutrition*, *151*(6), 1646–1655. https://doi.org/10.1093/jn/nxab024

Handayani, Y., Winarso, S., Ningtyias, W., & Farida. (2021). The Effectiveness Of Android Based Applications An Adherence Monitoring System For Adolescent Female Consumption Fe Tablets. *Journal of Dr Soebandi Health*, *9*(2), 115–124. https://doi.org/10.36858/jkds.v9i2.293

Handiso, Y. H., Belachew, T., Abuye, C., Workicho, A., & Baye, K. (2021). A community-based randomized controlled trial providing weekly iron-folic acid supplementation increased serum- ferritin, -folate and hemoglobin concentration of adolescent girls in southern Ethiopia. *Scientific Reports*, *11*(1), 1–7. https://doi.org/10.1038/s41598-021-89115-5

Helmyati, S., Syarifa, C. A., Rizana, N. A., Sitorus, N. L., & Pratiwi, D. (2023). Acceptance of Iron Supplementation Program among Adolescent Girls in Indonesia: A Literature Review. *Amerta Nutrition*, *7*(3SP), 50–61. https://doi.org/10.20473/amnt.v7i3SP.2023.50-61

Hong, S. H., Chun, T. K., Nam, Y. J., Kim, T. W., Cho, Y. H., Son, S. J., Roh, H. W., & Hong, C. H. (2025). Digital Mental Health Interventions for Adolescents: An Integrative Review Based on the Behavior Change Approach. *Children*, *12*(6), 770. https://doi.org/10.3390/children12060770

Kementerian Kesehatan RI. (2023). *Profil Kesehatan Indonesia Tahun 2022. Jakarta: Kementerian Kesehatan Republik Indonesia*.

Laurence, M. C., Titaley, C. R., Tahitu, R., Asmin, E., Kailola, N. E., Istia, S. S., Tando, Y. D., Pasamba, L. A., & Sara, L. S. (2025). The effect of WhatsApp-based reminders on enhancing knowledge and adherence to weekly iron-folic acid supplementation among adolescent girls in Maluku, Indonesia. *Frontiers in Digital Health*, *7*(March), 1–10. https://doi.org/10.3389/fdgth.2025.1542006

Rahmatina, A. N., Ghozali, M., Adnani, Q. E. S., Hilmanto, D., Zuhairini, Y., Susiarno, H., & Panigoro, R. (2025). A Scoping Review of Nutritional Intake and Physical Activity in Adolescent Girls with Anemia. *International Journal of Women's Health*, *17*, 2891–2907. https://doi.org/10.2147/IJWH.S519269

Sari, P., Herawati, D. M. D., Dhamayanti, M., & Hilmanto, D. (2022). Anemia among Adolescent Girls in West Java, Indonesia: Related Factors and Consequences on the Quality of Life. *Nutrients*, *14*(18), 1–13. https://doi.org/10.3390/nu14183777

Taufiqurrahman, Hafid, F., Mujayanto, Nuswantari, A., Ratno, Rahayuningtyas, R., Prasetyawan, A. E., & Rahayu, Y. S. (2025). Iron Supplement Adherence, Dietary Intake, and Anemia Risk among Adolescent Girls in Madiun Regency, Indonesia.

Journal of Health and Nutrition Research, *4*(3). https://doi.org/https://doi.org/10.56303/jhnresearch.v4i3.723

Wardani, D. S. S. J. (2024). Literature Review : Factors Related to Iron Tablets Consumption Compliance among Adolescent Girls in Indonesia. *Media Gizi Kesmas*, *13*(2), 878–897.

Yudina, M. K., & Fayasari, A. (2020). Evaluation of Iron Tablet Supplementation Program of Female Adolescent in East Jakarta. *Jurnal Ilmiah Kesehatan (JIKA)*, *2*(3), 147–158. https://doi.org/10.36590/jika.v2i3.56