



## THE INFLUENCE OF WHATSAPP, TEACHER SUPPORT AND ATTITUDE OF ADOLESCENT GIRLS TOWARDS COMPLIANCE IN TAKING IRON SUPPLEMENT TABLETS: SYSTEMATIC REVIEW

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### ABSTRACT

Anemia is a significant health issue among adolescent girls, often caused by iron deficiency. Compliance in consuming Iron Tablets (Tablet Tambah Darah, TTD) is crucial to address this condition. This study aims to systematically review the influence of WhatsApp, teacher support, and attitudes of adolescent girls on TTD compliance. The method used is a systematic review with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach. A search conducted on journals indexed by SINTA and Scopus resulted in a total of 860 journals using the keywords anemia, iron supplement compliance, adolescents, technology WhatsApp, teacher support, and attitudes. Of these, 15 journals met the inclusion criteria and were further analyzed. The results of the study indicate that the use of WhatsApp can enhance awareness and knowledge of adolescent girls about the importance of consuming TTD, although the outcomes vary. Teacher support has also been shown to play an important role in improving compliance, as teachers can provide the necessary encouragement and supervision. Positive attitudes of adolescent girls towards TTD consumption significantly contribute to compliance. In conclusion, the combination of communication technology, teacher support, and fostering positive attitudes can enhance TTD compliance among adolescent girls. This multidimensional approach can be an effective strategy to reduce the prevalence of anemia among adolescent girls.

Keywords: adolescents; anemia; attitudes; iron supplement compliance; teacher support; whatsapp

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## INTRODUCTION

Anemia is a condition in which the number of red blood cells or hemoglobin concentration in the blood is lower than normal. According to the latest World Health Organization (WHO) standards, anemia is defined as a hemoglobin (Hb) concentration in the blood of 11 g/dL or less (Trihandini, Aisah, & Ernawati, 2023). Anemia is usually experienced by adolescent girls, characterized by a lack of hemoglobin or iron-containing protein in the blood. This condition can interfere with physical performance and cognitive development (Naufaldi & Idris, 2020). Adolescent girls are particularly susceptible to anemia due to rapid growth during puberty and regular menstrual cycles, which increase their iron needs (Humayrah & Putri, 2023). In addition, anemia in adolescence can have long-term health consequences, including higher risks during pregnancy and childbirth, potentially increasing maternal mortality and morbidity (Thaker et al., 2023).

According to the World Health Organization (WHO), the global prevalence of anemia among women aged 15-49 years ranges from 20-40% in 2022, with Yemen having the highest prevalence at 61.5% in 2019. WHO aims to reduce this prevalence by 50% by 2025 (WHO, 2022). In Indonesia, the prevalence of anemia continues to increase, reaching 32% among adolescents aged 15-24 years in 2018 (WHO, 2020). To address anemia, the Indonesian

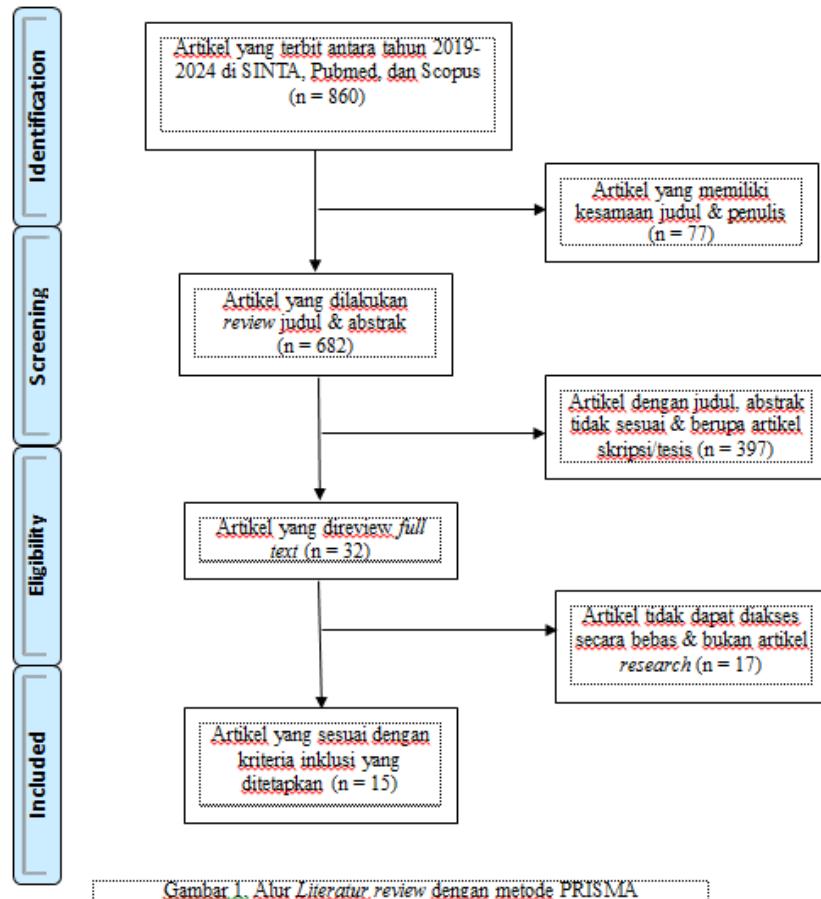
government has launched a program to provide iron and folic acid supplements in the form of Iron Supplement Tablets (TTD) since 2014. However, the effectiveness of this program is limited due to low compliance among adolescents. Data from the 2018 Riskesdas survey showed that although 76.2% of adolescents received TTD, only 1.4% consumed  $\geq 52$  tablets per year as recommended, indicating a significant gap in compliance (Syswianti et al., 2024).

In response to low levels of adherence, innovative approaches are being explored to improve adherence (Yanniarti, Yorita, et al., 2023). One such approach is the use of WhatsApp Blast, a messaging service that allows for the dissemination of health information and reminders. WhatsApp has been shown to be an effective tool in improving adherence to health recommendations in a variety of contexts (Aisah et al., 2022). Technological developments are playing an increasingly significant role in the management of anemia among adolescent girls. The use of instant messaging applications such as WhatsApp can open up new opportunities for more effective and efficient health promotion (Sulistiyanti et al., 2022). These digital platforms allow for the rapid, timely delivery of health information and regular reminders for iron supplement consumption (Rahayu et al., 2024). In addition, health applications and wearable devices that can monitor hemoglobin levels and nutritional status in real time are also being developed, allowing for early intervention and personalized treatment (Cynara et al., 2020). With the continued integration of technology, it is hoped that the prevalence of anemia among adolescent girls can be reduced significantly.

## METHOD

The method used in this study is a systematic review with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach. PRISMA is a guideline used to ensure that systematic review and meta-analysis reports are carried out transparently and completely. In this study, the first stage was to search for journals in databases indexed by SINTA and Scopus. The keywords used in the search included anemia, adherence to taking iron tablets, adolescent girls, WhatsApp, teacher support, and attitudes. This search process resulted in a total of 860 journals relevant to the topic raised. Furthermore, screening was carried out based on the title and abstract to evaluate relevance to the research objectives. Journals that did not meet the inclusion criteria, such as studies conducted in non-adolescent populations or those that did not discuss the proposed intervention, were eliminated from the list.

Based on the results of the initial screening, the selected journals were then evaluated in more depth by reading the full text to ensure compliance with the inclusion criteria. The inclusion criteria applied included journals that discussed the influence of communication technology such as WhatsApp, teacher support, and the attitudes of adolescent girls towards adherence to taking iron tablets (TTD). After going through a full text evaluation stage, 15 journals that met the inclusion criteria were identified for further analysis. This analysis involved assessing the quality of the studies, extracting important data such as research methods, main results, and conclusions drawn from each journal. The results of this analysis were then synthesized to provide a comprehensive picture of the influence of WhatsApp, teacher support, and adolescent girls' attitudes on adherence to taking TTD, as well as to identify gaps in existing research and provide recommendations for future research.



Gambar 1. Alur *Literatur review* dengan metode PRISMA

## RESULT

### Article Search Result Identification (Step 1)

At this stage, an article search was conducted using keywords relevant to the research topic that had been determined, namely anemia, adherence to taking iron tablets, adolescent girls, WhatsApp, teacher support, and attitudes. The search was conducted systematically in leading journal databases such as SINTA, Pubmed, and Scopus to ensure the completeness and representation of the information sources used. The results of this search included 860 articles that were initially identified as potential for inclusion in further analysis.

### Article Selection (Steps 2 and 3)

After obtaining the initial search results, screening was carried out based on the titles and abstracts of the articles that had been identified. The inclusion criteria used at this stage included research that focused on the adolescent girl population, discussed aspects of anemia and adherence to taking iron medication, used communication technology such as WhatsApp as one of the research variables, and examined the role of teacher support and adolescent attitudes towards adherence. Articles that were not relevant or did not meet the inclusion criteria were eliminated at this stage. Articles that passed the title and abstract screening were then selected to be read in full. This stage aims to ensure that the selected articles truly contain relevant information and are in accordance with the focus of the research. At this time, researchers evaluate in more depth the research methods used, data analysis, suitability to the research objectives, and the overall quality of each article. Articles that do not meet quality standards or do not make a significant contribution to the research questions posed can be eliminated from the next stage of analysis.

### **Critical Appraisal (Step 4)**

The critical appraisal stage in this systematic review is carried out carefully to evaluate the methodological quality of each selected article. The evaluation process involves two or more independent reviewers who apply predetermined assessment criteria. These criteria include internal validity, which assesses the extent to which the study design can avoid internal bias such as the influence of other variables or defects in measurement; external validity, which assesses the extent to which the results of the study can be generalized to a wider population or different context; consistency of research methods, which measures the clarity and consistency in the implementation of research methods; selection of representative samples and in accordance with research objectives; use of valid and reliable measuring instruments in collecting data; appropriate and appropriate data analysis to answer research questions; and rational interpretation of the results supported by the available evidence. Each article is assessed based on these criteria and given a certain score or weight to reflect its level of quality. Articles that meet or approach all criteria well will receive a higher score, while articles that have significant deficiencies in one or more aspects will receive a lower score. The results of this critical appraisal stage are very important because they form the basis for compiling an accurate data synthesis and in-depth analysis in producing conclusions from this systematic research. Thus, this critical assessment not only ensures the reliability of the articles used, but also ensures that the findings produced can make a significant contribution to the scientific understanding of the selected research topic.

### **Combining Data, Summarizing and Presenting Results (Step 5)**

After going through the process of identifying, selecting, and evaluating the quality of articles, the final step was to combine the data from the selected articles. At this stage, relevant data were extracted from each article, including information on the study design, sample characteristics, interventions used (such as WhatsApp, teacher support, and attitudes in adolescent girls), the main results of each study, and conclusions drawn by the authors of the articles. The data from each article were then summarized and analyzed holistically to gain a deeper understanding of how WhatsApp, teacher support, and attitudes in adolescent girls affect iron supplement adherence. This synthesis of results also included identifying gaps in the existing literature, such as under-explored research areas or differences in results between studies. Based on this synthesis, recommendations for future research can be formulated to broaden the understanding and potential application of the findings in clinical practice and public health interventions. The presentation of results is done in a clear and structured manner, using tables, graphs, and supporting narratives to communicate key findings to readers and interested stakeholders.

Studies A1 to A15 illustrate the diversity in methodological approaches and research focus on adherence to iron supplementation in adolescent girls. The studies included a variety of research designs, such as observational analytic cross-sectional approaches (such as in Studies A1, A4, A5, A6, and A10), systematic reviews (such as in Studies A3, A11, and A13), and qualitative approaches to understand factors influencing adherence (such as in Studies A12, A14). Several studies also used experimental methods to measure the impact of health education interventions on adherence (such as in Studies A7 and A15). The results of these studies highlight the various factors influencing adherence, including knowledge, social support from teachers and families, and the effectiveness of information media such as WhatsApp. Collectively, these studies provide in-depth insights into the complexity of adolescent health issues related to iron supplementation in various geographic contexts, from Indonesia to other countries such as Ethiopia, Nigeria, Vietnam, and India.

**The research themes identified from journals A1 to A15 can be described as follows:**

**Theme Factors Affecting Compliance in Consuming Iron Supplements**

Research in this theme focuses on factors that affect the level of compliance of adolescent girls in consuming iron supplements. A1 shows that knowledge about the benefits of iron supplements is related to the level of compliance, while A2 highlights the role of support from teachers in increasing this compliance. A4 examines behavioral factors that influence the consumption of iron supplements, while A5 explores the influence of messages via WhatsApp, teacher support, and adolescent attitudes towards compliance. A6 adds perspectives from pilot schools for reproductive and sexual health, while A10 highlights the role of support from teachers, peers, and family on compliance behavior.

**Theme Influence of Interventions and Health Promotion**

This theme focuses on the effects of interventions and health promotion on the level of compliance in consuming iron supplements. A3 conducts a systematic review of compliance with iron supplementation among adolescent girls, while A8 tests the effectiveness of health promotion through leaflets and WhatsApp on the compliance of pregnant women in consuming iron supplements. A7 explores the influence of health education on the knowledge and attitudes of adolescent health cadres regarding the consumption of iron tablets, while A9 presents an overview of factors influencing compliance among junior high school students in Banda Aceh.

**Theme Prevalence of anemia and associated factors among adolescent girls**

A11 is a systematic review and meta-analysis that explores the prevalence of anemia and associated factors among adolescent girls in Ethiopia. It evaluates multiple studies to provide a comprehensive overview of the condition and its influencing factors.

**Theme Relationship between knowledge and adherence to iron supplementation among adolescent girls**

Studies with quantitative approaches and experimental designs are represented by A12 to A15. A12 explores the relationship between knowledge and adherence to iron supplementation among adolescent girls. A13 highlights the role of teacher support in improving adherence, while A14 examines the effects of WhatsApp messages, teacher support, and adolescent attitudes on adherence. A15 explores adherence in a pilot school for sexual and reproductive health, providing additional perspectives on how the school environment may influence adherence to iron supplementation.

**Table 1.**  
**Data Charting**

No	Judul	Peneliti	Tahun	Asal Negara	Metode	Teknik Sampling	Hasil
1	The Relationship Between Knowledge And Compliance With Iron Supplement In Adolescent Women(1)	Yuniartanti Putri Et Al.,	2023	Indonesia	Desain Observasional Analitik, Pendekatan Potong Lintang	Pengambilan sampel acak sederhana	Mayoritas responden memiliki pengetahuan yang memadai, hubungan signifikan antara pengetahuan dan kepatuhan
2	Hubungan Pengetahuan Dan Dukungan Guru Dengan Kepatuhan Mengonsumsi Tablet Tambah Darah (Ttd) Pada Remaja Putri Di Sman 4 Tana Toraja(2)	Windha Pagiu	2024	Indonesia	Pendekatan Kuantitatif, Stratified Sampling Stratified Random Sampling	Stratified random sampling	Hubungan signifikan antara pengetahuan guru dan dukungan dengan kepatuhan mengonsumsi ttd
3	Compliance Of Iron Supplementation And Determinants Among Adolescent Girls: A Systematic Review(3)	Tabita Al.,	Et 2023	Nigeria	Systematic Review	Tidak spesifik	Variasi tingkat kepatuhan dan faktor-faktor yang mempengaruhi kepatuhan
4	Behavioral Factor Analysis Of Blood Supplement Tablet Consumption In Adolescent Girls As An Effort To Prevent Stunting(4)	Meika Sari Et Al.,	2023	Indonesia	Observasional Analitik	Total sampling	Pengetahuan, sikap, dan dukungan dari tenaga kesehatan dan orang tua berhubungan signifikan dengan perilaku konsumsi tablet tambah darah
5	Pengaruh Whatsapp Blast, Dukungan Guru Dan Sikap Remaja Putri Terhadap Kepatuhan Minum Tablet Tambah Darah (TTD) Di Wilayah Puskesmas Tampang	Magdalena & Hartoyo	2024	Indonesia	Analitik Potong Lintang, Regresi Logistik	Purposive sampling	Whatsapp blast memiliki pengaruh signifikan terhadap kepatuhan minum ttd

	Tumbang Anjir(5)						
6	Kepatuhan Konsumsi Tablet Tambahan Darah Pada Sekolah Percontohan Kesehatan Reproduksi Dan Seksualitas(6)	Nurjanah & Azinar	2023	Indonesia	Survei Analitik, Pendekatan Potong Lintang	Total sampling	Pengetahuan menjadi faktor dominan yang mempengaruhi kepatuhan konsumsi ttd
7	The Effect Of Health Education On The Knowledge And Attitudes Of Adolescent Health Cadres About Tablet Fe Consumption In Sma N 1 Kediri Regency(7)	Rahmawati	2023	Indonesia	Kuasi-Eksperimental, Pretest-Posttest Satu Kelompok	Total sampling	Pendidikan kesehatan berpengaruh signifikan terhadap pengetahuan dan sikap remaja tentang konsumsi tablet besi
8	Pengaruh Promosi Kesehatan Melalui Media Leaflet Dan Whatsapp Terhadap Kepatuhan Minum Tablet Zat Besi Pada Ibu Hamil Di Puskesmas Tempura(8)	Aliva Et Al.,	2021	Indonesia	Kuasi-Eksperimental, Kontrol Non-Ekuivalen Pretest-Posttest	Random sampling	Promosi kesehatan efektif meningkatkan kepatuhan minum tablet zat besi
9	Description And Factors Affecting The Level Of Obedience Consuming Blood-Boosting Tablets In Junior High School Adolencence In Banda Aceh(9)	Awalia	2023	Indonesia	Observasional Analitik	Cluser random sampling	Pengetahuan dan perilaku signifikan mempengaruhi tingkat kepatuhan konsumsi ttd
10	Teacher, Peer, And Family Support Is Associated With Compliance Behavior In Consuming Blood Supplement Tablets(10)	Yusriani Et Al.,	2023	Indonesia	Kuantitatif, Chi Square	Total sampling	Dukungan informasi dari teman sebaya, guru, dan keluarga berhubungan signifikan dengan kepatuhan konsumsi tablet tambah darah

11	Prevalence And Associated Factors Of Anemia Among Adolescent Girls In Ethiopia: A Systematic Review And Meta-Analysis(11)	Habtegiorgi S Et Al.,	2022	Ethiopia	Systematic Review, Meta Analisis	Total sampling	Prevalensi anemia yang moderat hingga tinggi, faktor-faktor terkait seperti usia dan tinggal di daerah pedesaan
12	Compliance And Associated Factors Of Iron And Folic Acid Supplementatio n Among Pregnant Women In Rural Vietnam	Ernest	2023	Vietnam	Kuantitatif, Cross Sectional	Total sampling	Tingkat pendidikan dan pengetahuan kesehatan maternal berpengaruh signifikan dalam kepatuhan suplementasi
13	Factors Influencing Compliance To Iron Supplementatio n Among Adolescent Girls In South Africa: A Descriptive Qualitative Study	Red	2023	Afrika Selatan	Kualitatif Deskriptif	Random sampling	Pengetahuan, aksesibilitas, dan preferensi personal mempengaruhi kepatuhan
14	Impact Of Health Education Intervention On Compliance With Iron Supplementatio n Among Adolescent Girls In Urban India	Veronica	2023	India	Kuantitatif Eksperimen tal, Pretest- Posttest Kontrol Grup	Cluser random sampling	Intervensi pendidikan kesehatan signifikan dalam meningkatkan kepatuhan
15	Correlation Between Knowledge And Attitudes Of Female Adolescents Towards Compliance With Iron Supplements	Nurhaera	2023	Indonesia	Kuantitatif, Chi Square	Total sampling	Ada hubungan antara pengetahuan dan sikap remaja putri dalam mengkonsumsi ttd

## DISCUSSION

### Factors Affecting Compliance with Iron Supplement Consumption

Factors affecting compliance with iron supplement consumption are important research subjects in the context of adolescent health, especially adolescent girls (Andini & Agestika, 2022). Studies included in this theme highlight various aspects that influence how well adolescents comply with recommendations to consume iron supplements. Study A1 showed that comprehensive knowledge about the benefits of iron supplements is positively associated with compliance levels (Habtegiorgis et al., 2022). This suggests that a good understanding of the positive impacts of iron supplementation on health can increase adolescents' awareness and willingness to consume it regularly (Ernawati et al., 2022). In addition to knowledge, social support also plays a crucial role in increasing compliance. Study A2 highlights the important role of teachers as agents who can influence adolescents' decisions to comply with health recommendations. Support and encouragement from teachers not only increase understanding of the importance of iron supplements but also create an environment that supports the adoption of this healthy behavior among students (Agustiani et al., 2022). This suggests that interventions in educational settings, such as health education integrated into the school curriculum, can be an effective strategy in increasing compliance.

Behavioral factors also play a role in influencing compliance with iron supplement consumption. The A4 study focused on the analysis of behavioral factors influencing adherence, demonstrating the complexity of motivational and psychological factors influencing adolescents' decisions to regularly consume iron supplements. Through this approach, researchers can identify behavioral patterns that influence adherence and design more targeted interventions to improve the overall health of adolescent girls (Magfirah et al., 2023). In conclusion, the theme of factors influencing adherence to iron supplement consumption illustrates the importance of a holistic and multidimensional approach to improving adolescent health. Effective health education, social support from the educational environment and family, and a deep understanding of individual behavior are key to formulating sustainable strategies to improve adolescent girls' adherence to iron supplement consumption (Turnip & Arisman, 2022). The integration of these factors not only strengthens the understanding of factors influencing adherence, but also encourages the implementation of more effective and sustainable health programs in the community.

The prevalence of anemia and related factors among adolescent girls, the discussion covers a number of important aspects that are relevant to consider. Anemia is a serious global health problem, especially affecting the adolescent girl population in many countries (Khanal et al., 2024). Factors that contribute to the prevalence of anemia are not only limited to nutritional aspects, but also include social, economic, and environmental factors. In general, low levels of iron in the diet, especially in menstruating adolescent girls, are often the main cause of anemia. An unbalanced diet and other nutritional deficiencies can also worsen the condition. In addition, limited access to health services that provide iron supplementation and inadequate nutrition education also play a role in maintaining high levels of anemia (Singh et al., 2022). Social and economic aspects also have significant impacts. For example, low socioeconomic status can hinder access to iron-rich foods and health services needed for the prevention and management of anemia (Aini & Nian Afrian Nuari, 2024). In addition, low education and lack of awareness of the importance of proper nutrition can exacerbate the problem, especially in marginalized communities or those in high social vulnerability. Strategies to address the prevalence of anemia among adolescent girls need to integrate a holistic approach, including increasing access to iron supplementation, comprehensive nutrition education, and a better understanding of the underlying social and economic risk factors. Through this approach, it is hoped that the burden of anemia in the adolescent girl population can be reduced and overall health can be promoted.

### **Knowledge and Compliance in Consuming Iron Tablets Among Adolescent Girls**

Knowledge and compliance in consuming iron tablets among adolescent girls, it is important to consider several factors that influence their consumption patterns (Alfianingsih & Purwito, 2024). Adequate knowledge about the benefits of iron tablets is directly related to the level of compliance in consuming them. Adolescent girls who understand the health benefits of this supplement tend to be more motivated to maintain consistent consumption. In addition to knowledge, other factors such as accessibility and availability of iron tablets also play an important role. The availability of this product in places that are easily accessible to adolescent girls, such as at schools or health centers, can increase their likelihood of consuming it regularly (Farhan et al., 2024). Conversely, limited access or obstacles in obtaining this supplement can be a significant barrier to compliance. Social support also has a big impact. Adolescent girls who receive support from family, peers, or teachers tend to be more likely to comply with the use of iron tablets. This support is not only in the form of reminders, but also through understanding and emotional support that increases their motivation to maintain health.

A holistic approach to promoting compliance in taking iron tablets among adolescent girls involves comprehensive education, improving accessibility, and creating a supportive social environment (Fitriya et al., 2023). By considering these aspects comprehensively, it is hoped that the health of adolescent girls can be improved through consistent and appropriate practices in taking iron tablets.

### **Effects of WhatsApp messages, teacher support, and adolescent attitudes towards compliance in taking iron tablets**

The effects of WhatsApp messages, teacher support, and adolescent attitudes towards compliance in taking iron tablets are important aspects in the context of adolescent girls' health. Messages via WhatsApp can be an effective communication tool to provide reminders and information regarding the benefits and importance of taking iron tablets regularly (Sri Intan Malika et al., 2024). Studies have shown that digital interventions, including mobile messaging, significantly improve adherence to health interventions (Syeptri, 2020). Messages delivered clearly and consistently through this platform can increase adolescent girls' awareness and knowledge about their health (Magdalena & Hartoyo, 2024). A study by Wang et al. further emphasized that WhatsApp-based reminders led to a 30% increase in medication adherence among adolescents, highlighting the effectiveness of such interventions (Syswianti et al., 2024). In addition, support provided by teachers also has a significant impact. Teachers, as authority figures in the school environment, not only provide information but also provide moral encouragement and emotional support to adolescent girls to remain consistent in taking iron tablets (Rahayu et al., 2024). Research indicates that teacher-led health education programs contribute to increased health literacy and better compliance with supplementation programs among students. Furthermore, a study by Rodriguez et al. found that students who received consistent teacher reinforcement and health education showed a 40% higher compliance rate with iron tablet consumption compared to those who did not (Boli et al., 2022). This can increase their motivation and reduce the possibility of inaccuracy in using the supplement (Sobari et al., 2023). Teachers can also act as role models by reinforcing positive behaviors and creating an environment that supports healthy practices (Fauziah et al., 2023).

Adolescent attitudes towards compliance are also important factors. Positive attitudes towards health and awareness of the benefits of iron tablets can influence their compliance. This attitude includes adolescents' perceptions of long-term health benefits, perceptions of the risk of anemia, and personal motivation to maintain general health (Sari et al., 2022). A study by Singh et al. found that adolescents who perceive anemia as a serious health risk are more likely to adhere to iron supplementation (Yanniarti, Nurhaliza, et al., 2023). Furthermore, recent findings by Miller & Scott suggest that social influence from peers and family members also plays a crucial

role in shaping adolescent attitudes towards iron supplementation (Anggraini et al., 2024). Interventions that include peer education and parental involvement have been shown to improve adherence rates among adolescent populations (Verona et al., 2021). Thus, the use of WhatsApp messages, support from teachers, and the formation of positive attitudes of adolescent girls towards compliance are important strategies in promoting good health practices and improving their quality of life through improved health (Farhan et al., 2024). Public health initiatives should consider integrating digital messaging interventions with school-based support programs and broader social influence strategies to ensure sustained compliance with iron supplementation among adolescents (Syeptri, 2020). Future research should explore the long-term impact of these strategies and the potential for scaling up similar interventions in different educational and cultural contexts (Khanal et al., 2024).

## CONCLUSION

Overall, this systematic review of factors influencing adherence to iron supplementation in adolescent girls revealed several important insights. First, adequate knowledge about the benefits of iron supplementation was positively associated with adherence, highlighting the importance of health education. Second, social support, especially from teachers, plays a crucial role in improving adherence by creating a supportive environment in educational settings. In addition, behavioral factors such as attitudes toward health and personal motivation also significantly influence adherence behavior. Furthermore, interventions through platforms such as WhatsApp for communication and support have shown promising results in increasing awareness and consistency in iron supplementation use in adolescent girls. Overall, addressing these factors through integrated health education, enhanced social support mechanisms, and the use of technology can effectively improve adherence to iron supplementation, thereby improving health outcomes in adolescent girls globally..

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