



## THE ROLE OF ADOLESCENT POSYANDU IN THE DETECTION AND PREVENTION OF ANEMIA: A HEALTH BELIEF MODEL APPROACH

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### Abstrak

Anemia tetap menjadi persoalan kesehatan masyarakat yang serius, khususnya di negara-negara berpenghasilan rendah dan menengah. Kondisi ini muncul ketika jumlah sel darah merah atau kadar hemoglobin berada di bawah batas normal. Berdasarkan data Dinas Kabupaten Maluku Tengah menunjukkan bahwa prevalensi anemia lebih tinggi pada remaja perempuan dibandingkan remaja laki-laki. Penelitian ini bertujuan untuk mengetahui peran posyandu remaja dalam deteksi dan pencegahan anemia dengan menggunakan pendekatan health belief model. Penelitian ini menggunakan metode penelitian kualitatif dengan pendekatan fenomenologi. Peneliti memilih informan penelitian dengan cara *purposive sampling*. Partisipan pada penelitian ini terdiri dari 4 remaja puteri berusia 10 sampai 19 tahun, 1 kader remaja, 2 petugas kesehatan, 1 pemerintah desa. Teknik pengumpulan data yang digunakan peneliti adalah wawancara, dokumentasi, dan observasi. Hasil penelitian menunjukkan bahwa permasalahan anemia di Kabupaten Maluku Tengah dipengaruhi oleh beberapa penyebab permasalahan mulai dari 1) permasalahan tentang persepsi kerentanan terhadap anemia (pengetahuan tentang anemia dan faktor penyebab anemia), 2) persepsi keseriusan (resiko anemia dan dampak anemia), 3) persepsi manfaat (konsumsi tablet tambah darah (TTD) dan ikut posyandu remaja), 4) hambatan dalam pencegahan (Kurangannya partisipasi remaja dan rendahnya tingkat kepatuhan dalam mengkonsumsi TTD) dan 5) peran posyandu remaja (edukasi/penyuluhan kesehatan dan pelayanan pemeriksaan kesehatan. Kesimpulan hasil penelitian menunjukkan bahwa posyandu remaja memainkan peran penting dalam pencegahan anemia di kalangan remaja. Melalui edukasi, distribusi TTD, dan pemeriksaan hemoglobin (Hb) posyandu menjadi ujung tombak dalam upaya promotif dan preventif pada pencegahan anemia remaja.

**Kata Kunci:** *Posyandu Remaja, Anemia, Health Belief Model*

### Abstract

Anemia remains a serious public health problem, particularly in low- and middle-income countries. This condition occurs when the number of red blood cells or hemoglobin levels falls below normal limits. Data from the Central Maluku District Health Office indicate that the prevalence of anemia is higher among adolescent girls than among adolescent boys. This study aims to examine the role of adolescent Posyandu (community-based health posts) in the detection and prevention of anemia using the Health Belief Model approach. This study employed a qualitative research method with a phenomenological approach. Informants were selected using purposive sampling. Participants consisted of four adolescent girls aged 10–19 years, one youth health cadre, two health workers, and one village government representative. Data collection techniques included interviews, documentation, and observation. The results showed that anemia-related problems in Central Maluku District were influenced by several factors, including: 1) perceived susceptibility to anemia (knowledge of anemia and its causes), 2) perceived severity (risks and impacts of anemia), 3) perceived benefits (consumption of iron supplementation tablets and participation in adolescent Posyandu), 4) barriers to prevention (low adolescent participation and low adherence to iron supplementation tablet consumption), and

5) the role of adolescent Posyandu (health education/counseling and health examination services). The study concludes that adolescent Posyandu plays an important role in preventing anemia among adolescents. Through education, distribution of iron supplementation tablets, and hemoglobin testing, adolescent Posyandu serves as the frontline in promotive and preventive efforts to address adolescent anemia.

**Keywords:** *Adolescent Posyandu, Anemia, Health Belief Model.*

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## INTRODUCTION

Anemia remains a serious public health problem, particularly in low- and middle-income countries. This condition occurs when the number of red blood cells or hemoglobin levels fall below normal limits (Yuan et al., 2025). The second National Health and Nutrition Examination Survey (NHANES) showed that anemia was most commonly found among adolescent girls, with a prevalence of 5.9% (Ershler et al., 2005). According to the World Health Organization (WHO), anemia is defined by hemoglobin levels below 11 g/dL and is classified into mild anemia (9.0–10.9 g/dL), moderate anemia (7.0–8.9 g/dL), and severe anemia (less than 7.0 g/dL) (Michael et al., 2025). Globally, the WHO estimated that in 2019, approximately 30% of women aged 15–49 years experienced anemia. Hemoglobin plays a vital role in the circulatory system by binding oxygen in the lungs and transporting it to tissues throughout the body (Sulistiyowati et al., 2024).

Based on data from the Central Maluku District Health Office from January to April 2025, cases of anemia among adolescents remained relatively high. In the 10–14-year age group, there were 6 cases among male adolescents and 16 cases among female adolescents. Meanwhile, in the 15–19-year age group, 17 cases of anemia were found among male adolescents and 25 cases among female adolescents. These data indicate that the prevalence of anemia is higher among female adolescents than among male adolescents. Anemia is a condition in which the number or function of red blood cells decreases, leading to reduced oxygen supply to body tissues and potentially affecting cognitive and motor development. Anemia is of particular concern in children and adolescent girls who experience menstruation. Adolescents also require higher micronutrient intake to support growth and sexual maturation during puberty. Therefore, under conditions of inadequate nutritional intake, adolescents are at risk of developing anemia along with its associated consequences (Werner et al., 2025).

These anemia cases were distributed across 18 sub-districts, with service coverage provided by 31 community health centers (Puskesmas) in Central Maluku Regency. This situation indicates that adolescent anemia remains a challenge in primary health care services and requires integrated prevention and control efforts. Adolescent Posyandu (community-based health posts for adolescents) represent one form of community-based health intervention that plays an important role in improving adolescent health status, including the early detection and prevention of anemia. The presence of Adolescent Posyandu serves as a strategic means of directly reaching adolescents at the village level. Adolescent Posyandu are designed as community-based health services aimed at improving adolescent health through promotive and preventive activities.

Preventing anemia among adolescents requires a comprehensive approach that does not focus solely on treatment but also prioritizes early detection, prevention, and health promotion efforts (Aurelia & Zahrani, 2025).

The analysis was conducted using the Health Belief Model (HBM) proposed by Rosenstock (Rosenstock & Becker, 1974). This model consists of several main components, namely perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. The HBM approach is used to understand health behaviors based on individuals' perceptions of disease susceptibility and severity, the benefits of preventive actions, and perceived barriers. In the context of anemia among adolescents, the HBM can explain how adolescents perceive the risk of anemia, its impact on health, the benefits of participating in adolescent Posyandu activities, and the barriers they face in undergoing anemia screening and prevention. Unlike previous studies, this study examines the role of adolescent Posyandu in the detection and prevention of anemia using the HBM approach.

## METHODS

This study was conducted in Central Maluku Regency in October 2025. The research employed a qualitative method with a phenomenological approach. Informants were selected using purposive sampling, a sampling technique based on specific considerations. The research subjects served as informants who provided the information required for the research process. Based on this approach, informants were determined according to predefined criteria to meet the research needs. Participants in this study consisted of four adolescent girls aged 10–19 years, one adolescent health cadre, two health workers, and one village government representative. Data collection was carried out through interviews. The interviews used open-ended questions and were conducted in a non-formally structured manner to obtain in-depth information. This approach aimed to explore the perspectives of the research subjects on various issues that were highly valuable as a foundation for deeper, more comprehensive, and more detailed data exploration. In addition, documentation studies were conducted by reviewing documents related to adolescent reproductive health services (PKPR) in the prevention of adolescent anemia. The purpose of observation in this study was to obtain insights that could only be gained through direct observation of real situations. The form of observation carried out focused on the efforts of adolescent Posyandu in the detection and prevention of anemia among adolescents.

**RESULTS AND DISCUSSION**

The identification of anemia-related problems in Central Maluku Regency was influenced by several contributing factors, including perceptions of susceptibility to anemia (knowledge about anemia and its causes), perceptions of severity (risks and impacts of

anemia), perceptions of benefits (consumption of iron supplementation tablets and participation in adolescent Posyandu), barriers to prevention (low adolescent participation and poor adherence to iron supplementation tablet consumption), and the role of adolescent Posyandu (health education/counseling and health screening services).

Table 1. General description of themes on anemia problems

Themes	Subthemes	Findings
Perceived Susceptibility	Knowledge about Anemia	<ul style="list-style-type: none"> <li>Limited understanding of anemia among adolescents</li> <li>Lack of information regarding iron-rich foods, such as red meat, green leafy vegetables, and various types of legumes</li> <li>Anemia was often perceived simply as “lack of blood”</li> <li>The need for adolescents to regularly consume iron supplements or iron supplementation tablets to prevent and treat anemia</li> <li>Ability to identify signs of anemia, such as excessive fatigue, pale skin, headaches, shortness of breath, and decreased concentration</li> </ul>
	Causes of Anemia	<ul style="list-style-type: none"> <li>Inadequate dietary intake that did not meet nutritional requirements</li> <li>Excessive menstrual bleeding</li> <li>Disorders in red blood cell production</li> </ul>
Perceived Severity	Risk of Anemia	<ul style="list-style-type: none"> <li>Lack of understanding regarding the risks of anemia</li> <li>Adolescent girls tend to have a higher risk of anemia due to menstruation and increased iron requirements during growth</li> <li>Risks related to pregnancy and reproductive health</li> <li>Nutritional deficiencies required for red blood cell formation</li> </ul>
	Impact of Anemia	<ul style="list-style-type: none"> <li>Adolescents experienced rapid fatigue and lack of energy</li> <li>Difficulty concentrating</li> <li>Suboptimal learning performance</li> <li>Limited awareness of the impacts of anemia</li> </ul>
Perceived Benefits	Consumption of Iron Supplementation Tablets	<ul style="list-style-type: none"> <li>Awareness of the benefits of iron supplementation tablets</li> <li>Efforts to prevent anemia</li> <li>Plays an important role in supporting rapid growth and development during adolescence</li> <li>Improves immune function</li> <li>Maintains cognitive ability</li> </ul>
	Participation in Adolescent Posyandu	<ul style="list-style-type: none"> <li>Routine monitoring of adolescent health</li> <li>Increased awareness and adoption of healthy behaviors</li> <li>Acts as a bridge for providing healthcare services to adolescents</li> </ul>
Perceived Barriers	Low Adolescent Participation	<ul style="list-style-type: none"> <li>Limited participation of adolescents in attending adolescent Posyandu</li> <li>Adolescents did not yet understand the importance of the role of adolescent</li> </ul>

Role of Adolescent Posyandu	Low Adherence to Iron Supplementation Tablet Consumption	<p>Posyandu</p> <ul style="list-style-type: none"> <li>• Adolescents felt embarrassed to attend adolescent Posyandu</li> <li>• Lack of parental support, as some parents perceived adolescent Posyandu participation as having negative effects on adolescents</li> <li>• School schedules often conflicted with adolescent Posyandu activities</li> <li>• Adolescents were often reluctant or failed to consume iron supplementation tablets</li> <li>• Adolescents complain of side effects after consuming iron supplementation tablets, such as nausea or dizziness</li> <li>• Lack of health education provided by healthcare workers</li> </ul>
	Health Education and Counseling	<ul style="list-style-type: none"> <li>• Improved adolescents' health knowledge about anemia</li> <li>• Reduced the risk of health problems</li> <li>• Improved adolescent nutritional status as an effort to prevent anemia</li> </ul>
	Health Screening Services	<ul style="list-style-type: none"> <li>• Measurement of anemia through hemoglobin level examination</li> <li>• Distribution of iron supplementation tablets to adolescent girls</li> </ul>

1. Perceived Susceptibility

Perceived susceptibility to anemia among adolescents was influenced by their level of knowledge and contributing risk factors. Perceived susceptibility is an important component in understanding how adolescent

girls perceive the risk of health conditions related to anemia. These interviews focused on identifying factors considered to cause anemia in adolescents, including menstruation, dietary patterns, and inadequate iron intake.

Table 2. Summary of interview findings on perceived susceptibility to anemia

Informant Codes	Status	Keywords	Categories	Subthemes
P1	Adolescent	<i>"What I know is that anemia means lack of blood."</i>	Limited understanding of anemia	Knowledge about anemia
P2	Adolescent	<i>"I don't understand anemia. Maybe it's like a headache or dizziness."</i>		
P3	Adolescent	<i>"I'm often pale and dizzy, maybe because of anemia, but I don't know for sure what causes it."</i>		
P4	Adolescent	<i>"What I know is that anemia makes you tired easily. I don't know the symptoms clearly."</i>		
P5	Health worker	<i>"Many adolescents do not yet understand anemia. Their knowledge is still limited, as seen from their lack of understanding of anemia symptoms."</i>		
P1	Adolescent	<i>"I don't really like vegetables. They taste bad to me. I prefer eating instant noodles."</i>	Inadequate intake of nutritious foods	Causes of anemia
P2	Adolescent	<i>"Food at home depends on what my parents cook. Sometimes there are vegetables, sometimes fish. The</i>		

P6	Health worker	<i>daily menu is inconsistent.” “Adolescents often consume fast food such as instant noodles or buy snacks like fried foods. When they are hungry, what matters is eating and feeling full, without considering nutritional intake.”</i>	
P3	Adolescent	<i>“Every time I menstruate, I feel dizzy, lightheaded, and sometimes faint. Within two hours, I may need to change my sanitary pad.”</i>	Menstruation
P4	Adolescent	<i>“Every month, I menstruate twice. It makes me very weak and even disrupts my school activities.”</i>	
P5	Health worker	<i>“Excessive menstruation can cause anemia.”</i>	
P6	Health worker	<i>“Adolescents often come to the health center when menstrual bleeding is heavy, and some experience dizziness or even fainting.”</i>	

2. Perceived Severity

Perceived severity of anemia was influenced by adolescents’ understanding of anemia-related risks and the impacts of anemia

that contribute to its occurrence. The interviews focused on identifying limited awareness and decreased physical endurance as factors that play a role in the development of anemia.

Table 3. Summary of interview findings on perceived severity of anemia

Informant Codes	Status	Keywords	Categories	Subthemes
P1	Adolescent	<i>“For me, anemia or lack of blood is not dangerous. I only need to rest or sleep, and then I can resume activities.”</i>	Lack of awareness	Risk of anemia
P2	Adolescent	<i>“I was once offered iron supplementation tablets by my mother, but I don’t like taking medicine. Menstruation is normal for women, so anemia is just a common illness experienced by everyone.”</i>		
P5	Health worker	<i>“Many adolescents do not yet understand or realize the risks of anemia. When counseling about iron supplementation tablets is conducted, adolescent girls only then realize that anemia has risks that can affect health.”</i>		
P3	Adolescent	<i>“I once experienced this condition; my body felt weak and dizzy, making it difficult to concentrate on lessons taught by the teacher.”</i>	Decreased physical endurance	Impact of anemia
P4	Adolescent	<i>“I don’t really know what the impacts of anemia are. But every time I menstruate, my face becomes pale, and I just</i>		

P6 Health worker  
*want to keep sleeping.”  
 “The impact of anemia can reduce physical endurance. Most adolescents who come for health checks have hemoglobin levels below normal.”*

3. Perceived Benefits  
 The interviews were directed at exploring perceptions of the benefits of consuming iron supplementation tablets and participating in adolescent Posyandu. The focus of these interviews was anemia prevention and adolescent health. Positive perceptions of benefits can encourage adherence and active participation in anemia-preventive behaviors among adolescents.

Table 4. Summary of interviews findings on perceived benefits of anemia prevention

Informant Codes	Status	Keywords	Categories	Subthemes
P1	Adolescent	<i>“At the adolescent Posyandu, iron supplementation tablets were given. Usually, they are taken once a week.”</i>	Anemia prevention	Consumption of iron supplementation tablets
P5	Health worker	<i>“Iron supplementation tablets are given to adolescent girls, especially at schools and Posyandu, to prevent anemia.”</i>		
P6	Health worker	<i>“We always emphasize that taking iron supplementation tablets is very important, especially for adolescent girls who have started menstruation, to prevent anemia.”</i>		
P7	Village government	<i>“The village government strongly supports anemia prevention among adolescents. We use village funds to provide iron supplementation tablets, which are distributed monthly at adolescent Posyandu.”</i>		
P8	Cadre	<i>“Some adolescents complain of paleness, dizziness, lack of sleep due to schoolwork, and feeling weak and fatigued. At adolescent Posyandu, we provide iron supplementation tablets.”</i>		
P1	Adolescent	<i>“I attend adolescent Posyandu to check my health. Usually, they check blood pressure, body weight, and other measurements.”</i>	Adolescent health	Participation in adolescent Posyandu
P2	Adolescent	<i>“Adolescent Posyandu provides a space for us to ask questions about health problems. If I feel dizzy or have flu symptoms, health services are also provided there.”</i>		
P5	Health worker	<i>“As health workers, we actively encourage adolescents to participate in Posyandu. We notify schedules monthly via WhatsApp, collaborate with cadres to visit homes, and use village loudspeakers to</i>		

P7 Village government *announce activities.”  
“As a village official, I strongly support adolescent Posyandu programs because they are community-based health efforts managed by, from, for, and together with the community, including adolescents, integrating basic health services with healthy life-skills education.”*

4. Perceived Barriers

These interviews aimed to explore barriers to anemia prevention, including low adolescent participation and poor adherence to iron supplementation tablet consumption. Barriers to the implementation of adolescent anemia

prevention included limited understanding of adolescent Posyandu and individual-level factors, which contributed to suboptimal implementation of anemia prevention programs.

Table 5. Summary of interview findings on barriers to anemia prevention

Informant Codes	Status	Keywords	Categories	Subthemes
P3	Adolescent	<i>“At first, I didn’t know what adolescent Posyandu was. Participation is indeed low because not many adolescents are interested in coming.”</i>	Understanding of adolescent Posyandu	Low adolescent participation
P4	Adolescent	<i>“I was only told to come to Posyandu, but didn’t know why. I just followed along.”</i>		
P6	Health worker	<i>“Low adolescent participation occurs because Posyandu schedules often clash with school hours. We usually move the schedule to the afternoon to avoid this.”</i>		
P7	Village government	<i>“Parental support is very important in increasing adolescent participation. Many parents think Posyandu is only for infants and toddlers, so they question why adolescents should attend.”</i>		
P8	Cadre	<i>“Adolescent participation is very low. They think Posyandu is not beneficial and only discusses menstruation or reproductive issues, which they consider taboo.”</i>		
P3	Adolescent	<i>“I often forget to take iron supplementation tablets. They taste bitter and make me feel nauseous.”</i>	Individual factors	Low adherence to iron supplementation tablet consumption
P4	Adolescent	<i>“Why take them? I only take them when a health worker reminds me at Posyandu.”</i>		
P6	Health worker	<i>“Low adherence to iron supplementation tablet consumption among adolescents is very common, even though health workers</i>		

*repeatedly remind them to take the tablets.”*

5. Role of Adolescent Posyandu	<p>This section explores the role of adolescent Posyandu in anemia prevention, which includes health education/counseling and health screening services. Adolescent Posyandu played an important role in anemia prevention efforts as well as in hemoglobin examinations,</p>	<p>particularly for adolescents who were vulnerable to anemia. This role demonstrates that adolescent Posyandu functions not only as a facility for health screening, but also as a strategic educational medium in shaping adolescents’ behaviors related to early detection and prevention of anemia</p>
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Table 6. Summary of interview findings on the role of adolescent posyandu

Informant Codes	Status	Keywords	Categories	Subthemes
P1	Adolescent	<i>“During the counseling sessions, we are informed about how to prevent anemia, such as getting enough sleep and consuming iron-rich foods like green vegetables.”</i>	Anemia prevention	Health education and counseling
P2	Adolescent	<i>“To prevent anemia, we are also taught how to properly consume iron supplementation tablets.”</i>		
P3	Adolescent	<i>“We are also provided with education about hemoglobin testing to detect anemia.”</i>		
P6	Health worker	<i>“The Central Maluku District Health Office provides hemoglobin testing devices to each Posyandu program coordinator to conduct anemia screening among adolescents.”</i>	Hemoglobin examination	Health screening services
P7	Health worker	<i>“Hemoglobin testing aims to detect anemia in adolescents. We only need to take a blood sample from the fingertip, and the results are available within minutes.”</i>		

Posyandu is a community-based health effort (UKBM) program organized from, by, for, and together with the community, including adolescents, with the aim of empowering them and facilitating access to health services. This program is directed at improving adolescents’ health status and healthy life skills. Through Posyandu, adolescents are expected to understand the health problems they face and actively participate in identifying appropriate solutions (Dewi et al., 2024). Adolescent Posyandu is expected to function as a platform for community participation that helps adolescents understand various health problems they experience, while also expanding the coverage of promotive and preventive services provided by primary health centers through PKPR (Kumalasari & Nursanti, 2018).

Anemia among adolescents is generally caused by iron deficiency, which is often associated with inadequate nutritional intake, blood loss during menstruation, and limited understanding of

balanced nutrition (Aurelia & Zahrani, 2025). The highest prevalence of anemia is found among women of reproductive age, including adolescent girls who experience menstruation (Mildon et al., 2023). The age range of 10–14 years, which typically occurs around 12–18 months before menarche, is considered the peak growth period for girls. During this critical developmental phase, the body’s nutritional requirements increase, particularly for iron. If nutritional intake is not adequately met, the risk of anemia increases significantly (Fitriani et al., 2025).

Providing iron supplementation tablets is one of the effective strategies to overcome anemia. Regular consumption has been proven to help increase hemoglobin levels in the body. Among adolescents, nutrition education is necessary to enhance understanding of the importance of a balanced diet, adequate protein intake, and sufficient sources of iron. In addition, adolescents are encouraged to increase their consumption of

fruits and vegetables, take iron supplementation tablets regularly, and undergo periodic hemoglobin examinations as a preventive measure against anemia (Don et al., 2025).

Anemia during adolescence not only causes short-term health problems but also has broader impacts on quality of life. Various studies indicate that adolescents with anemia tend to experience reduced work capacity, impaired cognitive development, lower academic achievement, and a higher risk of infections (Khoufah & Winarti, 2025).

## CONCLUSION

Adolescent Posyandu plays a crucial role in the prevention of anemia among adolescents. Through health education, distribution of iron supplementation tablets, and hemoglobin screening, Posyandu serves as the frontline of promotive and preventive efforts targeting adolescents. Strong support and collaboration among multiple stakeholders, including the government, healthcare workers, and adolescent cadres, are essential to enhance early detection and effective prevention of anemia in adolescents.

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