
Association between Nutrition Knowledge of Anemia with Self-Efficacy

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Abstract

Background: Anemia is a significant public health issue among adolescent girls, especially in Indonesia. Inadequate knowledge of anemia contribute to low self-efficacy in managing the condition. Objective: To analyze the association between nutrition knowledge of anemia and self-efficacy in adolescent girls. Methods: This study used a cross-sectional design, involved 33 female students in grade X of Aulia Cendekia Senior High School, aged 14-17, were recruited in this study. The data collected includes subjects characteristics, nutrition knowledge, and self efficacy . Chi-square test was applied in this analysis. Results: A mean age of subjects was 15,18 years. Subjects who had a high level of self-efficacy amounted to 33,3%, while the low category amounted to 66,7%. The results of data analysis using the chi square test showed that P value = 0.049 ($p < 0.05$), which means there is a association between nutrition knowledge with self-efficacy in adolescent girls.

1. Introduction

Anemia in adolescent girls is still a nutritional problem that requires serious attention, both at the global and national levels. (Ruqaiyah et al., 2025) The World Health Organization (2019) reported that approximately 30% of women aged 15–49 years experience anemia. Based on data from the 2007–2018 Basic Health Research (Riskesdas) in Indonesia, cases increased among adolescents, with a prevalence of 32%, with 27.2% of these cases being young women. The Indonesian Health Survey (2023) also noted that 15.5% of adolescents aged 15–24 years experience anemia, with the figure reaching 18% among young women. Data from South Sumatra recorded the prevalence of anemia among young women reaching 57.1%, while in Palembang City the figure still exceeds the threshold for public health problems, reaching 26.5% among school-age adolescents. (DKPS, 2020).

Adolescent girls are a very vulnerable group because they are in a period of rapid growth, experiencing hormonal changes, and have increased iron needs due to menstruation.(Sari et al., 2022)This condition requires a proper diet and adequate nutritional knowledge. However, many teenagers don't understand the importance of iron, its dietary sources, or how to increase its absorption.(Verma & Baniya, 2022). Based on limited nutritional knowledge, adolescents tend to make poor food choices, consume foods low in iron, or be

unaware of factors that inhibit iron absorption. This increases the risk of anemia even though food availability is actually sufficient. (Putra et al., 2020).

Knowledge alone isn't always enough to change eating behaviour. Many teens understand the concept of healthy eating but lack the confidence or self-confidence to apply it in their daily lives. In this context, self-efficacy becomes a crucial factor. (Rahayu et al., 2024) Self-efficacy describes the extent to which adolescents believe in their ability to make healthy choices, maintain healthy eating behaviours, and overcome obstacles in implementing a nutritious diet. (Aprianti et al., 2018) Adolescents with high self-efficacy generally demonstrate greater consistency, courage in making health-promoting decisions, and strong motivation to make positive behavioural changes. Conversely, low self-efficacy often leads individuals to give up easily or revert to unhealthy habits. (Susanti et al., 2024).

Previous research has focused more on nutritional adequacy, eating behaviour, or the effectiveness of iron supplementation, while the cognitive and psychological aspects of adolescents have not received adequate attention. (Agustina et al., 2020; Stubbendorff et al., 2025). However, the success of anemia prevention interventions depends heavily on both dimensions: knowledge as the cognitive foundation and self-efficacy as the driver of behaviour. Without sufficient understanding and the confidence to act, nutrition information often fails to produce tangible behaviour change (Dzerounian et al., 2022).

Therefore, this study was conducted to determine the relationship between nutritional knowledge about anemia and self-efficacy in adolescent girls. The research findings can be utilized by schools, health workers, and policymakers to develop more targeted educational strategies and are expected to provide a more comprehensive picture of the factors that contribute to the formation of anemia prevention behaviours in adolescent girls. A knowledge-based approach needs to be accompanied by strengthening self-efficacy, so that adolescents not only know what to do but also feel capable of doing it. This will enable anemia prevention efforts to be more effective, sustainable, and provide long-term benefits for adolescent girls' health.

2. Research Methods

The present study used a quantitative research with the type of analytic observational research using a cross-sectional approach. The data collection was conducted on October 2025. The participants were adolescence girls in Aulia Cendekia Senior High School, Talang Jambe, Palembang City. The number of samples in this study amounted to 33 respondents was carried out purposively with the following inclusion criteria (i) age 16-19 years (ii) who gave consent to participate, and (iii) and were present on the day of the visit to the school were included in the study. Meanwhile, the exclusion criteria are subjects who have incomplete data during data collection.

The data collection in this study were the subject characteristics (age), knowledge of anemia and self-efficacy. Knowledge of anemia was assessed by using a questionnaire, consisting of 13 multiple-choice questions. The assessment covers several aspects including definition, causes, signs and symptoms, impacts, and ways to prevent anemia, as well as recommendations for consuming iron tablets. The questionnaire has been tested for validity and reliability. Reliability was assessed using the Cronbach's alpha coefficient, yielding scores of 0.87. Subjects with good knowledge are categorized as having a score >80, sufficient 60-80, and insufficient <60. Self-efficacy is categorized as high if the score is above the mean, and vice versa if self-efficacy is low below the mean. Univariate analysis was conducted to describe the characteristics of the subjects, knowledge, and self-efficacy. The correlation test used the chi-square test; if the p-value <0.05, there is a significant relationship between the two variables. This study has passed the ethical feasibility test by the Health Research Ethics Commission, Faculty of Public Health, Sriwijaya University Number: 842/UN9.FKM/TU.KKE/2025.

3. Result and Discussion

This study involved young women in their mid-adolescence. The average age of respondents was 15.18 years, with the majority being 15 years old. This reflects a group in an active developmental phase, characterized by physical changes and increased nutritional needs, particularly iron (Mesias et al., 2013). The results showed

that the majority of respondents had limited knowledge, 66.7% were in the "less knowledge" category, while 33.3% were in the "sufficient knowledge" category. No respondents were found with "good knowledge." This indicates that most adolescents do not adequately understand the concept of anemia, including its causes, effects, and dietary sources that can help prevent it. Regarding self-efficacy, 66.7% of respondents were in the low category, while only 33.3% had high self-efficacy. This pattern indicates that more than half of adolescents lack the confidence to manage their diet, choose the right foods, or maintain anemia-preventing behaviours in their daily lives. Analysis using the chi-square test yielded a p-value of 0.049, which is below the 0.05 significance level. These results indicate a significant relationship between nutritional knowledge about anemia and self-efficacy in adolescent girls (Table 1).

Table 1. Subject Characteristics

| Subject Characteristics | n | % |
|-------------------------|--------------|------|
| Age (years) | | |
| 14 | 3 | 9.1 |
| 15 | 24 | 72.7 |
| 16 | 3 | 9.1 |
| 17 | 3 | 9.1 |
| Mean ± SD | 15.18 ± 0.72 | |
| Nutritional knowledge | | |
| Less (<60) | 22 | 66.7 |
| Sufficient (60-80) | 11 | 33.3 |
| Good (>80) | 0 | 0.0 |
| Self-efficacy | | |
| Low (<mean) | 22 | 66.7 |
| High (≥mean) | 11 | 33.3 |
| Mean ± SD | 15.18 ± 0.72 | |

Research findings indicate that adolescent girls' knowledge about anemia remains inadequate. Many respondents were unfamiliar with the factors that cause anemia, the increased need for iron during adolescence, or how to ensure adequate iron intake. This finding aligns with research indicating that nutritional literacy among adolescents in Indonesia still requires special attention, and a lack of exposure to information may be a contributing factor (Simaibang et al., 2025).

In addition to limited knowledge, adolescent girls also tend to have low self-efficacy. Low self-efficacy often arises when individuals are unsure about maintaining healthier eating choices, despite their intentions. During adolescence, environmental and peer influences, emotional changes, and a lack of experience making independent decisions can influence these beliefs. (Kleppang et al., 2023) This illustrates that the challenges faced by adolescents are not only cognitive, but also psychological.

Table 2. Relationship between Knowledge about Anemia and Self-Efficacy (Note: *chi-square test, significant if p-value <0.05)

| Knowledge | Self-Efficacy | | | | p-value* |
|------------|---------------|------|------|------|----------|
| | Low | | High | | |
| | n | % | n | % | |
| Less | 14 | 82.4 | 3 | 17.6 | 0.049 |
| Sufficient | 8 | 50.0 | 8 | 50.0 | |

Statistical test results indicate a significant relationship between nutritional knowledge and self-efficacy (Table 2). This means that the better an adolescent's understanding of anemia, the more likely they are to feel capable of implementing preventive behaviours. This relationship can be explained through self-efficacy theory. Bandura (1995) which states that knowledge is one of the basic assets for building self-confidence. When someone understands what to do and the reasons why an action is important, their self-confidence to do it tends to increase. This is in line with research by Hall et al. (2016) found a significant relationship between

nutrition knowledge, self-efficacy, and behaviour in fifth-grade students in Title I (low SES) and non-Title I (high SES) schools, with regression analysis showing both significantly predicting behaviour (knowledge: $\beta = 0.35$, $p = 0.002$; self-efficacy: $\beta = 0.70$, $p = 0.0001$). This was also supported by the findings Sharma & Vidal (2023) who found a significant positive relationship between nutritional knowledge and self-efficacy in adolescents ($n = 2210$), with a regression coefficient of $\beta = 0.19$ and $P = 0.001$, and adjusted $r^2 = 0.038$.

These findings also align with health behaviour models, such as the Health Belief Model, which emphasizes that an individual's perception of risks and benefits is influenced by their understanding of the health issue. In the case of anemia, adolescents who understand its impact and how to prevent it are typically more motivated and confident in their ability to choose health-promoting foods (Alyafei & Easton, 2024; Jaya et al., 2023). Furthermore, low self-efficacy in adolescent girls suggests the need for a more comprehensive educational approach. Providing information alone may not be enough to change behaviour. Intervention programs that combine education and practical training, such as menu planning, practicing food choices, or simulating everyday situations, can enhance adolescents' success experiences, ultimately strengthening their self-efficacy. These efforts can also improve adolescents' ability to navigate social influences that often act as barriers to adopting healthy eating behaviours.

Thus, the research results confirm that nutritional knowledge plays a role in developing self-efficacy. When both are improved simultaneously, adolescents' ability to implement anemia-preventive behaviours can significantly improve.

4. Conclusions

Most adolescent girls still have inadequate nutritional knowledge and suboptimal self-efficacy, with a significant relationship between the two. This confirms that increasing understanding of anemia plays a role in strengthening adolescents' confidence in adopting preventative behaviours. Therefore, educational programs for adolescents need to combine the delivery of nutritional information with efforts to build confidence in choosing and maintaining healthy eating habits. Future research is recommended to examine other factors, such as family support or peer influence, to provide a more comprehensive and applicable understanding of the determinants of anemia-preventive behaviours.

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