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Knowledge Levels of Anemia Among Female Adolescents: A Descriptive Study

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Anemia merupakan salah satu masalah kesehatan masyarakat yang menjadi perhatian publik, baik di tingkat nasional maupun global, khususnya di antara remaja putri. Remaja putri yang mengalami anemia dapat berdampak buruk pada pertumbuhan fisik, kesehatan reproduksi hingga fungsi kognitif. Penelitian-penelitian sebelumnya menyebutkan masih kurangnya pengetahuan pada populasi rentan ini. Belum adanya penelitian mengenai tingkat pengetahuan terhadap anemia di Kabupaten Indramayu mendasari terlaksananya penelitian ini sebagai langkah awal inisiasi program kesehatan mengenai pencegahan dan penanganan anemia pada remaja putri. Tujuan: Mengetahui gambaran tingkat pengetahuan pada remaja puteri di Kabupaten Indramayu. Metode: Metode yang digunakan adalah pendekatan *cross-sectional* dengan *purposive sampling dan* kuesioner terstruktur dengan nilai validitas 0,468 dan reliabilitas 0,960 dari studi sebelumnya. Analisis yang digunakan adalah analisis univariat. Sebanyak 105 remaja putri yang memenuhi kriteria inklusi. Hasil: Sebanyak 53,3% remaja putri memiliki pengetahuan yang buruk dengan rata-rata usia responden adalah 16 tahun. Kesimpulan: Sebagian remaja putri memiliki pengetahuan buruk mengenai anemia, sehingga perlu dikembangkannya media edukatif yang bersifat interaktif dengan Bahasa yang sederhana dan penyuluhan kesehatan terkait anemia oleh pihak sekolah maupun dinas kesehatan setempat.

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Knowledge Levels of Anemia Among Female Adolescents: A Descriptive Study

Anemia is one of public health issue affecting female adolescent nationally and globally, particularly in female adolescents. Female adolescent who are experiencing anemia may have serious implication for physical growth, future reproductive health, and cognitive function. Previous studies reveal a lack of knowledge of anemia among this vulnerable population. Therefore, the analysis of knowledge levels related anemia in female adolescents is important to inform effective intervention strategies and prevent further complications. Objective: To investigate the analysis of knowledge related anemia among female adolescents. Method: A cross-sectional approach with purposive sampling and structured questions with validity 0.468 and reliability 0.960. A sum of 105 female adolescents who met the inclusion criteria participated in the study. Results: 53,3% of the female adolescents were found has poor knowledge related anemia with mean age of participants was 16 years old. Conclusion: A proportion of female adolescents exhibit less knowledge related anemia, therefore, it is necessary to develop interactive educational media and health promotion regarding anemia by the school and district health authorities.

Introduction

Anemia is one of the health problems that are often experienced by adolescent girls in developing countries (Wiafe et al., 2023). Some of the factors that cause this include adolescent girls still in their growing period, menstruation which causes significant blood loss and lack of iron consumption (Wiafe et al., 2023; Indriani & Rahayu, 2023). Previous research has shown that as many as 30% of women in the age range of 15-49 years experience anemia globally. In Indonesia, as many as 32% of adolescent girls experience anemia, this means that three to four out of ten adolescent girls are suspected to suffer from anemia (Riset Dinas Kesehatan, 2018). Young women who experience anemia can adversely affect physical growth, reproductive health, and cognitive function that can affect learning achievement in school (Gedefaw et al., 2015; Prasetya & Wihandani, 2019).

Although several studies have mentioned various adverse effects on people with anemia, there are still many young women who lack knowledge related to anemia (Novelia et al., 2022; Putri & Fauziyah, 2023). As many as 69.4% of adolescent girls in Bekasi, West Java, indicated that they still had poor knowledge related to anemia. The low knowledge about anemia is caused by the lack of exposure to health counseling about the disease. In addition, the lack of willingness to seek information related to anemia makes the lack of knowledge about anemia (Putri & Fauziyah, 2023). In line with the study, adolescent girls in Tangerang, West Java showed that 58.7% of adolescent girls still have less knowledge related to anemia. Adolescents with low knowledge tend to develop anemia related to nutritional status and unbalanced diets (Novelia et al., 2022). Lack of attention to the nutritional intake consumed daily plays a role in inadequate nutritional intake, especially micronutrients such as iron (Indrawatiningsih et al., 2021 ; Novelia et al., 2022).

In addition, research in developing countries such as India explains that the majority of adolescent girls lack knowledge of anemia, especially about the causes, signs and symptoms as well as disease prevention (Verma & Baniya, 2022). This knowledge gap is evident about the general symptoms of anemia such as symptoms that include fatigue, pale face, headache. In addition, a lack of knowledge about the importance of iron-containing foods and the important role of iron supplements was found in adolescent girls (Verma & Baniya, 2022; Asmarani, Martini, & Widodo, 2024). In fact, the majority of young women do not realize that they have

anemia because they consider some symptoms such as headaches and fatigue during menstruation to be normal (Sari et al., 2022; Mok et al., 2024)

Based on social learning theory, knowledge is formed through social interaction with the environment. Young women who learn from friends, family, or the media about the importance of consuming nutritious foods and iron supplements, will be more likely to adopt healthy behaviors that reduce the risk of anemia (Bandura, 2004). In the theory of knowledge and attitudes, it is stated that knowledge about health, one of which is anemia, will affect attitudes towards these problems and ultimately behavior. A good knowledge of anemia will form a more positive attitude towards its prevention and treatment, which ultimately encourages appropriate behaviors to reduce the risk of anemia. If young women feel vulnerable to anemia, they will automatically change their behavior by seeking information and taking prevention to develop anemia, for example by taking blood-boosting tablets (Strecher & Rosenstock, 1997).

The results of a preliminary survey of 10 female students, six female students stated that they did not know the cause of anemia and still did not clearly understand anemia. Therefore, an in-depth study of the picture of anemia knowledge in adolescent girls needs to be carried out. The lack of research on the level of knowledge about anemia in Indramayu Regency underlies the implementation of this research as the first step of a health program regarding the prevention and treatment of anemia in adolescent girls. One of the vocational high schools (SMK) in Indramayu Regency was chosen as the location of this study because it has the largest population of adolescent girls when compared to other schools so it is indicated that it can represent the population of adolescent girls in Indramayu Regency.

Method

This study uses the *cross-sectional* which will be held in June 2023. Previous research has shown that the design *cross-sectional* used to describe nutrition knowledge in adolescents demonstrating the effectiveness of the design in identifying knowledge levels in adolescent populations (Manandhar & Kakchapati, 2023). The population in this study is adolescent girls aged 15-19 years with a sample of young women in one of the vocational schools in Indramayu Regency. Sample selection was carried out by *purposive sampling* in accordance with inclusion and exclusion criteria. A total of 105 young women have met the inclusion criteria, including

young women who have experienced menstruation and are between the ages of 15-19. Adolescent girls who had a history of Thalassemia and were unable to attend school during the data collection process were excluded from this study. The questionnaire instrument consisted of structured statements regarding knowledge of anemia, diet and iron supplements in adolescent girls adapted from previous studies with a validity test value of 0.468 and a reliability test of 0.960 (Kusuma & Kartini, 2021). The variables analyzed included age and level of knowledge. The results of the analysis are presented in the form of percentages. Univariate analysis was chosen to obtain an overview of the data and as a first step to understand the next pattern of the problem before involving other variables (Field, 2013).

Research Results

Table 1. Age Characteristics

No	Age (years)	N	Percentage (%)
1	15	26	24,8
2	16	53	50,5
3	17	24	22,8
4	18	2	1,9
	Total	105	100
	Average 16 years old		

The age range of adolescent girls participating in anemia-related knowledge level screening activities varied between 15 and 18 years. Half of the respondents were 16 years old (50.5%). The average age of respondents was 16 years old.

Table 2. Knowledge

No	Knowledge	N	Presentase (%)
1	Good	22	21
2	Enough	27	25,7
3	Less	56	53,3
	Total	105	100

Table 2 shows the level of knowledge of young women in Indramayu Regency. One-fifth of the young women have good knowledge and a quarter have sufficient knowledge related to anemia. However, as many as 53.3% of female students still have knowledge that is still lacking related to anemia. So it can be concluded that some young women have a lack of knowledge about anemia.

Discussion

In this study, some of the respondents were on average 16 years old. Adolescents aged 15-19 years are in a rapid growth phase, experiencing menarche and menstruation regularly increasing the need for iron intake (Sari et al., 2022). Menstrual blood loss in adolescent girls leads to a higher risk of anemia than adolescent male (Zhu et al., 2021). In Indonesia, this age is prone to anemia because there is an increase in the prevalence of anemia in the age group of 15-49 years from 21.6% in 2018 to 22.8% in 2019. This increase in prevalence mainly occurs in rural areas (Sari et al., 2022). Indramayu is one of the rural areas in the province of West Java, Indonesia where currently specific data on anemia in adolescent girls has not been well documented.

The results of this study show that some young women have a lack of knowledge related to anemia. Adolescents' lack of knowledge can be caused by several factors such as inadequate health education in schools and influences from families such as parents' education levels and social and economic status. According to regional statistical data of Indramayu Regency, as many as 71.26% of Indramayu residents who work have an education level of junior high school graduates and below (Badan Pusat Statistik Kabupaten Indramayu, 2023). Parents with low levels of education tend to have low knowledge about balanced nutrition and the importance of micronutrients such as iron and lack understanding of the long-term impact of nutritional deficiencies on adolescent health and cognitive development (Astuti, 2023)). Low levels of education correlate with types of jobs that require low skills and minimal wages. This has a direct impact on earned income, limiting the ability to provide nutritious foods that tend to be more expensive than processed foods or simple carbohydrates (Ma et al., 2023; Hoteit et al., 2022).

Verma et al. (2021) explained that more than some adolescents do not know foods with balanced nutrition and the importance of consuming blood-boosting tablets for adolescents who are prone to anemia. In addition, only a small percentage of adolescent girls are well aware of anemia and iron supplements, but have limited access to facilities that support the prevention of anemia. In addition to the socioeconomic status of the family, this can be due to the fact that

government programs focus more on other vulnerable groups such as pregnant women, infants and pre-school children (Gedefaw et al., 2015).

Although there is currently ease of access to information, there are still many teenagers who do not understand their health conditions that can affect the future. For example, conditions such as headaches and fatigue during menstruation are considered normal so they are not aware of the impact of menstruation on hemoglobin levels (Verma & Baniya, 2022; (Novelia et al., 2022). This is exacerbated by a lack of knowledge about the signs and symptoms of anemia so that adolescent girls do not seek further information or treatment (Patil et al., 2018; Shaka & Wondimagegne, 2018).

The limited availability of educational materials that are interesting and easy to understand and approaches that are still conventional are one of the factors for the lack of knowledge in adolescents. Adolescents are in the phase of searching for identity and identity so they need the implementation and quality of education that can attract the interest of adolescents (Putri & Fauziyah, 2023). Although it is now easier to access information through the internet, teenagers may still not understand how to filter accurate and trustworthy information. Moreover, adolescents who have a low economic background may have limited access to health education about anemia and also meet the nutritional intake that plays an important role in preventing the incidence of anemia (Rahman et al., 2024).

According to the *health belief model* (HBM) theory, the results of this study imply that adolescent girls may not have enough perception of susceptibility to anemia because they have not felt symptoms in real life, lack of information on long-term impacts such as future risky pregnancies, and do not understand the benefits of iron supplements and lack of visual information media and health counseling. Therefore, the development of interactive visual educational media related to anemia and counseling about the dangers of anemia and the importance of adequate nutritional intake can be initiated by schools and local health offices. In addition, parental reinforcement and the active involvement of young women in improving knowledge in educational programs can increase knowledge related to anemia.

The limitation of this study is that this research has only been carried out in one of the schools and the number of research variables is limited. Follow-up research with a larger number

of research samples with more diverse research variables can be carried out in future research so that wider coverage of research results can be obtained as a basis for the preparation of interventions and health programs for adolescent girls.

Conclusion

The conclusion of this study is that adolescent girls in Indramayu Regency still have less knowledge about anemia. This shows the need from schools, communities and local health offices to organize health education and interactive media with simple language related to anemia to make it easier for students to understand. In addition, it is important to increase awareness and awareness of the dangers of anemia and promote the importance of preventing the occurrence of anemia in adolescents.

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