

Research article

Correlation of Anemia With Achievement Index in Female Adolescents in Junior High School

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In 2015, 5.9% of adolescents aged 10-24 years in the city of Cimahi, Indonesia experienced anemia. Adolescents may be at a particularly high risk of anemia which can be caused by consuming poor quality food, skipping meals, having menstruation every month and dieting because they want to slim down. Anemia in adolescents can lead to decreased body resistance, weakness and hunger, impaired concentration, and decreased learning achievement. This study was conducted to examine the relationship between anemia and student achievement at junior high school. This was a cross sectional study with a sample size of 85 female students recruited by proportionate stratified random sampling, with the criteria of not-menstruating, and not having a chronic illness or infection. The anemia prevalence was calculated and data were taken from the mid-semester exam results. Data analysis involved univariate and bivariate analyses. According to the findings, 45.9% of the female students had anemia and 5.9% had a fair level of exam results. There was a correlation between anemia and student achievement ($p < 0.05$). Suggestions based on the findings include for schools, in collaboration with nurses, to improve the activities of the school health unit by providing information about the importance of nutritional intake through changing dietary behavior.

Keywords: anemia prevalence, achievement index, female adolescent students

1. Introduction

Human resources are a measure of the success of a nation's development because of their role in managing natural resources. In Indonesia, human resource development includes education, health and economy. In 2011, The adolescent population in Indonesia reached 63.4 million (26.67%) of which 31,279,012 (49.30%) were girls. The large population of Adolescence will affect development from social, economic, and demographic aspects, both in the present and in the future.

Teenage is a critical stage of life. Hence, it is categorized as a vulnerable stage with a high health risk due to poor quality of food consumption, accustomed to skipping meals, having menstruation every month, and consuming less food to reach societal

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standards of body goals [1]. Female Adolescence are more susceptible to anemia because Adolescence are in a period of growth that requires higher nutrients including iron. Iron deficiency can lead to anemia and fatigue, conditions that prevent them from seizing opportunities to work and excel in school [2].

The prevalence of anemia in Indonesia was 21.7% with a proportion of 20.6% in urban areas and 22.8% in rural areas. Based on the age group, patients with anemia aged 5-14 years were 26.4% and 18.4% were in the 15-24-year age group. In the city of Cimahi, the number of adolescent girls was 17,790 with 5.9% of the population were 10-24 years old and had anemia. The cause of anemia in adolescents can be due to nutritional status, from 100 female students, 53,3% of them had normal nutritional status, 21% had anemia, and 5.9% had a fair level of exam result [3].

Based on the problems above, where the incidence of anemia in adolescent girls is still high and adolescence is a period of growth and high activity, if experiencing anemia becomes a problem for adolescents. Previous studies only looked at anemia from nutritional intake associated with achievement and HB levels associated with achievement in all adolescent girls between the ages of 10-24 years. whereas seen from the theory in general it does not see what causes anemia that anemia can cause a decrease in brain function, which will affect learning abilities, difficulty concentrating, weakness, and dizziness. so that researchers feel the need to know and conduct research on the relationship between the incidence of anemia and the achievement index of junior high school students or in early teens between 13-15 years.

2. Methodology

This study uses a survey method with a cross sectional approach, which was conducted in March 2017 at the Indonesian Teachers Association 1 Junior High School in Cimahi City. The population was 549 female students with the criteria of all female students in grades VII, VIII and IX, and not menstruating, the sample was taken by stratified random sampling and obtained as many as 85 female students. The instrument used to measure anemia is the Haemometer while to measure the achievement index using the report card with criteria based on the Minister of Education and Culture No. 54 of 2013. The procedure for collecting data begins with obtaining a research permit, an ethical test is carried out at the institutional ethics committee, after obtaining permission and passing the test. ethics then takes a sample, namely by collecting all female students from each class VII, VIII, IX, then a lottery is carried out using a lottery number based on the serial number for one day, then the next day an achievement index assessment is carried out

by looking at the 2016 report card scores. After the data is collected, data analysis is carried out using the Statistical Package for the Social Sciences, univariate analysis by looking at the frequency distribution of two variables, namely the incidence of anemia and the Achievement Index, while the Bivariate test because the data is categorical and categorical with tabs. el 2 x 3. then the data analysis uses the Person Chi-Square test.

3. Results

3.1. Univariate Analysis

3.1.1. Distribution of Anemia Prevalence for female adolescent students in Junior High School

TABLE 1: Distribution of Anemia Prevalence for female adolescent students in Junior High School in cimahi.

Variable		Total	Percentage of
Anemia	Anemia	39	45.9
	No Anemia	46	54.1
	Total	85	100
Achievement Index	Very Good	14	16.5
	Good	66	77.6
	Fair	5	5.9
	Total	85	100

Based on table 4.1 above, it was found that of the 85 female adolescent students, more than half did not experience anemia as many as 46 female adolescent students (54.1%) and more than half had a good achievement index, namely as many as 66 female adolescent students (77.6%).

3.2. Bivariate Analysis

3.2.1. The correlation between the Incidence of Anemia in teenage Girls and the Achievement Index in Junior High School

Based on table 4.1 above, the results showed that from 39 students with anemia, 34 students (87.2%) had a good achievement index, while from 46 students who did not experience anemia, 32 students (69.6%) had a good achievement index. The results of statistical tests obtained *p value of* 0.032 which means that there is a significant correlation between the incidence of anemia and the achievement index.

TABLE 2: Distribution of the correlation between the Incidence of Anemia in Young Women and the Achievement Index in Junior High School in Cimahi.

Hb Status	Achievement Index						Total		p value
	Very Good		Good		Fair		N	%	
	N	%	N	%	N	%			
Anemia	2	5.1	34	87.2	3	7.7	39	100	0.032
No Anemia	12	26.1	32	69.6	2	4.3	46	100	
Total	10	11.8	75	88.2	5	5.9	85	100	

Source: Primary Data Research Results in 2017

4. Discussion

4.1. Distribution of Anemia Prevalence in Female Adolescence student in Junior High School

Based on Table 4.1, it can be seen that from 85 respondents, 46 respondents (54.1%) did not have anemia, so there were less than half of them who had anemia. Although a small number of young female students have anemia, the condition of anemia greatly affects the activities of female adolescence students which is a period of growth and development and a transitional period where there is a change from childhood to early adolescence with Puberty (Menstruation), and also during puberty. During this growth period, young female students need adequate nutritional intake, but psychologically they have problems with body image, so they do more diets to maintain their appearance [4]. These results are in line with the research by [5] on the "Relationship of Menstruation Length with the Incidence of Anemia in Adolescent Girls". This is also in accordance with the theory [1] that one of the factors that influence the occurrence of anemia is inadequate iron intake, inhibition of iron absorption, persistent blood loss/menstruation, more iron needs, chronic disease and increased blood pressure. iron requirements. Another factor that affects the number of young women who experience anemia is because the iron needs of a young woman are 3 times greater than the iron need of a teenage boy where in adolescent girls experience heavy menstruation causes iron loss of about 1.3 mg per day during menstruation [6].

Whereas, the distribution of the Achievement Index for Fabela Adolescence student in Junior High Schools in Cimahi

The achievement index based on the results of the study shows that more than half of the respondents who have a learning achievement index in the good category are 66 respondents (77.6%) while students who have a poor achievement index are 5

respondents (5.9%). even though there are only 5 female Adolescence students, for these Adolescents it becomes a problem and requires attention.

These results are in line with the research [7], which states that there is a positive and significant effect between attention span on student achievement with a t-value of 4.156 and a sig. t 0.007 is smaller than (0.05). and it is concluded that low learning ability and attention can affect children's achievement index in school.

4.2. The Relationship between the Prevalence of Anemia in Young Women and the Achievement Index in Junior High School

Based on the results of the analysis in table 4.2, it is known that from a total of 85 female adolescent students who have anemia, there are 3 students who have sufficient achievement index, and 2 students who are not anemic have sufficient achievement index. but the results of statistical tests obtained indicate that there is a relationship between the incidence of anemia in adolescent girls with achievement index (p-value = $0.032 < (0.05)$).

The results of the study show that not all who have anemia have a sufficient/less achievement index. These results are in line with the research conducted [8] the results of her research show that of the 14 respondents with low hemoglobin levels, there are 11 respondents who have good learning achievements and 3 respondents have poor learning achievements. and also supported by the results of [9] the results of his research show that there are 29 respondents who are anemic with 12 respondents having good learning achievements, while 17 have poor learning achievements, from 41 respondents who are not anemic, 30 respondents have good learning achievements. , the remaining 11 respondents have poor learning achievement. Based on the results of Chi Square analysis ($\chi^2 = 7.153$ with $p = 0.007$) concluded that there is a relationship between hemoglobin levels and student achievement.

This is in accordance with the results of research, where anemia affects the achievement of the achievement index by affecting the attention span during lessons due to the lack of oxygen intake carried by the blood to the brain, resulting in decreased learning achievement. There are students who are not anemic but have low achievement, this is because there are other factors, namely learning facilities, teaching performance and interest and motivation [10]

5. Conclusion

The conclusion is that there is a relationship between anemia prevalence with student achievement index, it is necessary for students to know the impact of anemia so that students change their behavior in fulfilling nutrition with the right diet.

References

- [1] Briawan D. Anemia: Masalah gizi pada remaja wanita. Jakarta: EGC; 2014.
- [2] Arisman A. Nutrition in the life cycle. Jakarta: EGC; 2015.
- [3] Lilis H. Kegemukan, anemia, dan prestasi belajar siswa sekolah dasar di kota bogor. Universitas Pertanian Bogor; Bogor.2014.
- [4] Cahyaningsih DS. Pertumbuhan perkembangan anak dan remaja. Jakarta: Trans Info Media; 2011.
- [5] Febrianti F, Utomo WS, Adriana A. Lama haid dan kejadian anemia pada remaja putri. *Jurnal Kesehatan Reproduksi*. 2013;4(1):11–5.
- [6] Asrinah A. Menstruasi dan permasalahannya. 1st ed. Yogyakarta: Pusaka Panesia; 2011.
- [7] Triana Y. Pengaruh perhatian siswa dalam pembelajaran terhadap prestasi belajar matematika siswa kelas tinggi sekolah dasar se-gugus iv kecamatan pengasih tahun ajaran 2011/2012. Universitas Negeri Yogyakarta; Yogyakarta. 2012.
- [8] Madjid MA, Momongan NR, Malon NSH. Hubungan antara kadar hemoglobin dengan prestasi belajar pada siswi di SMP negeri 2 manado. Fakultas Kesehatan Masyarakat Universitas Sam Ratungali, Manado. 2015.
- [9] Astiandani A, Rokhanawati D. Hubungan kejadian anemia dengan prestasi belajar matematika pada remaja putri kelas 11 Di SMAN 1 sedayu tahun 2015. Digital Librarty Universitas Aisyah Yogyakarta. Yogyakarta. 2015.
- [10] Narwoto N, Soeharto S. Faktor-faktor yang berpengaruh terhadap prestasi belajar siswa kejuruan. *Jurnal Pendidikan Vokasi*. 2013;3(2):222-233.