

Associated Factors of Anemia Incidences in Adolescent Girls at Guntung Manggis Public Health Center Working Area Banjarbaru City

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Abstract

The Indonesian government intensifies the prevention and control of anemia in adolescent girls and women of reproductive age by prioritizing the provision of iron folic acid (IFA) at schools. The highest anemia prevalence in Kalimantan Selatan Indonesia is in Banjarbaru City, the highest coverage of IFA administration in Guntung Manggis Public Health Center, many factors can cause anemia in adolescent girls. The purpose of this study was to analyze the relationship between compliance of IFA consumption, eating behavior, parental education, parental occupation, parental income, and counseling information from public health care provider with the incidence of anemia in an adolescent girl. This study used an observational analytic method with a cross-sectional approach. The population of this study is all adolescent girls in the junior high school research location. The sample was 94 respondents taken by proportional stratified random sampling. Data were analyzed based on the chi-square and logistic regression test. The chi-square test showed there was no relationship ($p > 0,05$) between compliance of IFA consumption, eating behavior, parental education, parental occupation, parental income with the incidence of anemia in adolescent girls, while there was a relationship ($p < 0,05$) between counseling information from public health care provider with the incidence of anemia in adolescent girls. Logistic regression test showed that the biggest variable related to the incidence of anemia in adolescent girls is counseling information from public health care provider ($p < 0,05$).

Keywords: Anemia, adolescent girl, factor.

Introduction

The national program to accelerate nutritional improvement in Indonesia is prioritized in the prevention of anemia in adolescent girls and women of reproductive age (WUS). The results of Basic Health Research (Riskesmas) in 2013 showed that the prevalence of anemia in Indonesia reached 21.7%; female adolescents had the highest risk of anemia.¹ Impact of anemia on female adolescents is to reduce body endurance, reduce fitness, and agility thinking (learning achievement). The impact of anemia who carried on until she becomes a

pregnant woman results in an increased risk of stunted fetal growth (PJT), premature, low birth weight, stunting, pre, and postpartum bleeding, and increased risk of infant pain and death. The government then programmed the provision of iron folic acid (IFA) through school institutions for female adolescents and WUS which began in 2016.² From 13 regencies/cities in Kalimantan Selatan, the highest number of female adolescents who experienced anemia was in Banjarbaru City, surely 705 female adolescents from 1200 examination samples², and the highest percentage of IFA coverage at the Guntung Manggis Public Health Center (87,247%).³ During the two years of IFA administration for female adolescents, there has never been an evaluation of post-consumption IFA so that the prevalence of adolescents with anemia is unknown. The purpose of this study was to analyze the relationship between compliance of IFA consumption, eating behavior, parental education, parental occupation,

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parental income, and counseling information from public health care provider with the incidence of anemia in female adolescents in the Guntung Manggis Public Health Center working area, Banjarbaru City.

Materials and Method

This study used an observational analytic method with a cross-sectional approach. The population of this study was all female adolescents in the junior high school research location. The sample was 94 respondents taken by proportional stratified random sampling. Data collection used a questionnaire and measuring blood hemoglobin with univariate, bivariate, and multivariate analysis.

Results and Discussion

Univariate Analysis: A non-compliance of IFA consumption was very high (90.4%), eating behavior classified as sufficient (72.3%), last father’s education was high (58.5%), last maternal education was low (55.3%), respondents had working father (96.8%), unemployed mother (72.3%), low father income (54.3%), low maternal income (90.4%) and counseling information from public health care provider is good (77,7%).

Bivariate analysis: There was no relationship ($p > 0.05$) between compliance of IFA consumption, eating behavior, parental education, parental occupation, parental income with the incidence of anemia in female adolescents, while there was a relationship ($p < 0.05$) between counseling information from public health care provider with the incidence of anemia in female adolescents.

Table 1. Crosstab Bivariate Analysis of All Independent Variables

Independent Variable	p-value	RP	Conclusion
Compliance of IFA consumption	0.371	-	No Relationship
Eating behavior	0.245	-	No Relationship
Parental education	Father = 0.539	-	No Relationship
	Mother = 0.692	-	No Relationship
Parental occupation	Father = 0.501	-	No Relationship
	Mother = 0.825	-	No Relationship
Parental income	Father = 0.349	-	No Relationship
	Mother = 0.876	-	No Relationship
Counseling information from the public health care provider	0.014	3.6	There is a relationship

Multivariate Analysis

Table 2. Logistic Regression Test Results of Eating Behavior and Counseling Information from Public Health Care Provider

Variable	B	p-value	Exp (B)	95% CI
Eating behavior	0.570	0.390	1,769	0,482-6,496
Counseling information from public health care provider	1.431	0.028	4,181	1,167-14,976
Constanta	-0.422			

Counseling information from the public health care provider: The results of the study showed that counseling information from public health care provider was good (77.7%). Based on the chi-square test, it is known that there is a relationship between counseling information from public health care provider with the incidence of anemia in female adolescents $p=0.014 (<0.05)$. The results of the study showed that the provision of counseling information from the public health care provider of the Guntung Manggis public health center was scheduled regularly every month. The provision of IFA through schools was done every three months when the activity takes place using the lecture method of the public health care provider explaining the procedure for drinking IFA, the impact, and benefits of consuming IFA through drinking instructions printed on the medicine tablet box. The provision of information about health can increase a person’s knowledge for better health behavior, increase knowledge about anemia prevention, so that information dissemination activities are indeed very important to do.^{5,6} Providing information about health can increase one’s knowledge to choose to consume food with balanced nutrition. Knowledge is a very important element for the formation of a person’s behavior, behavior based on knowledge is better than behavior that is not based on knowledge.⁶ A public health care provider is one of the driving factors for changes in a person’s behavior⁷, the intensive information is given, the more behavioral changes will occur permanent.⁶

Compliance of IFA consumption: The results showed that compliance of IFA consumption was only 9.6% and non-compliance was very high (90.4%). Based on the Chi-Square test, it is known that there is no correlation between compliance of IFA consumption with the incidence of anemia in female adolescents $p=0.371 (>0.05)$. The administration of IFA was supplied at home resulted in its consumption not being effectively

controlled, besides IFA tablet that had a distinctive odor, taste and color and the appearance of post-consumption side effects such as nausea, dizziness, and black stools caused IFA to be discouraged.^{8,9,10} The results showed there were 9 respondents who regularly consumed IFA, but 2 of them are still experiencing anemia, this is because in addition to consuming IFA respondents also consume other ingredients that inhibit the absorption of iron into the body such as tea, coffee, and milk so that iron absorption is inhibited into the body.¹¹ Anemia is also caused by other factors, such as chronic blood loss, inadequate iron absorption and increased iron demand during puberty, pregnancy, and lactation.¹²

Eating behavior: The results showed that eating behavior was sufficient (72.3%). Based on the Chi-Square test, it is known that there is no relationship between eating behavior with the incidence of anemia in female adolescents $p=0.245$ (>0.05). Out of the 68 respondents who had sufficient eating behavior there were 7 respondents (10.3%) who were anemic, as well as 26 respondents with insufficient eating behavior 5 respondents (19.2%) were anemic. This is because the absorption of iron in the body is influenced by reinforcing and inhibiting factors. One of the reinforcing factors is the consumption of vitamin C while the inhibiting factor is the habit of consuming ingredients such as phytic acid in cereals, oxalic acid in vegetables, tannins in tea and coffee, calcium in milk.^{11,12} Out of the 94 respondents, there were 85 respondents with the habit of consuming iron absorption in the form of tea, coffee and milk. This habit occurs because these types of food are commonly available both at home and school canteen, their lack of information and knowledge about the intake of substances that can inhibit and encourage the absorption of iron causes them to be unable to choose the right food to consume.

Parental education: The results showed that the last education of fathers was high (58.5%), and the last education of mothers was low (55.3%). Based on the chi-square test, it is known that the last father's education is $p=0.539$ and the last maternal education is $p=0.692$ which means there is no correlation between parental education with the incidence of anemia in female adolescents ($p>0.05$). Out of the 55 respondents with the last father's education high, there were 8 respondents (14.5%) who were anemic, out of 52 respondents with the last maternal education was low there were 6 respondents (11.5%) who were anemic so it could be concluded that parental education was not the main factor

causes of anemia. Higher education will make it easier for someone to absorb health information, especially in the field of nutrition¹⁴, but in forming a good health behavior there are many other factors that can influence, cultural factors are one of the strong factors related to the choice of dishes for families. The role of fathers as family leaders has great authority in making decisions relating to health and family.¹⁵ High levels of education but not accompanied by behavioral changes cannot change the nutritional condition of respondents because even though they receive sufficient information but if not implemented correctly in daily life - days cannot change a person's health condition.

Parental occupation: The results showed that respondents with working fathers (96.8%) and mothers who did not work (72.3%). Based on the chi-square test, it is known that working fathers $p=0.501$ and unemployed mothers $p=0.825$, which means there is no correlation between parental occupation with the incidence of anemia in female adolescents ($p> 0.05$). Out of the 26 respondents with working mothers there were 3 respondents (11.5%) who were anemic, out of the 68 respondents with unemployed mothers there were 9 respondents (13.2%) who were anemic, so it could be concluded that the parental occupation was not the main factor causing anemia. Work is closely related to income; if it is limited or uncertain, it affects the consumption of balanced nutrition in family members.¹⁶ In addition to socio-economic, the level of knowledge of maternal nutrition is also very influential, the higher the mother's knowledge, the more positive the mother's attitude towards food nutrition, so the better the consumption of energy, protein, and iron of her family and can avoid anemia.¹⁷

Parental income: The results showed that respondents with low fathers income (54.3%) and low mothers income (90.4%). Based on the chi-square test, it is known that low fathers income $p=0.349$ and low mothers income $p=0.876$, which means there is no relationship between parental income with the incidence of anemia in female adolescents ($p>0.05$). Out of the 51 respondents with low fathers income there were 5 respondents (9.8%) who were anemic, out of 43 respondents with high fathers income there were 7 respondents (16.3%) who were anemic, so it could be concluded that parental income was not the main factor causing anemia. High and low income can be related to variations in the type of food purchased, but with good knowledge regarding anemia, it can be done in

the selection of iron source foods that are served to the family. Iron food sources do not have to be contained in the expensive food; utilizing local wisdom will be able to cut costs for family food supply.

Conclusion

There is no relationship between compliance of IFA consumption, eating behavior, parental education, parental occupation, parental income, with the incidence of anemia in female adolescents. There is a relationship between counseling information from public health care provider with the incidence of anemia in female adolescents.

Ethical Clearance: This study approved and received ethical clearance from the Committee of Public Health Research Ethics of Medical Faculty, Lambung Mangkurat University, Indonesia.

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Conflict of Interest: The authors declare that they have no conflict interests.

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